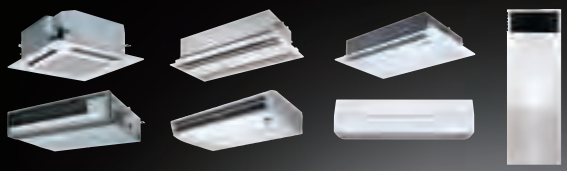
TOSHIBA

Leading Innovation

Air Conditioning For Large Buildings

TOSHIBA AIRCONDITIONING

Advancing the eco-evolution



SMMS i

SUPER MODULAR MULTI SYSTEM

Index

Advancing the eco-evolution

As relative newcomers in the evolution of the Earth, it's undeniable that humankind has had a greater impact on our planet's eco-system than any other life form. All organisms to some extent affect change on our global environment, but none quite as quickly and drastically as humans. Many scientists agree that human activity has accelerated pollution and climatic changes beyond the natural evolutionary process.

Globally, levels of carbon dioxide and average regional temperatures rise at alarming rates, impacting nature and civilization. And the quality of air we breathe continues to deteriorate in the cities we live in.

Whatever the causes, the message is clear: the future is up to us all, and we can do more to make things better.

The core of Toshiba Air Conditioning's philosophy is a profound respect for our global environment and the passionate pursuit toward improving the quality of life for our customers worldwide.

As part of that global commitment, we develop cutting-edge technologies and advancements that serve the benefit of people everywhere, by offering an ideal balance of comfort and ecologically superior products.

We advance R&D in the field of super energy-efficient, cleaner technologies and innovative products that not only use significantly less energy but help maintain air quality through state-of-the-art air purification systems for the home and business.

We endeavour to lead by example by delivering the highest quality environmental systems that give added value, and contribute responsibly to the advancement of humankind.

We call this vision, "Advancing the eco-evolution".

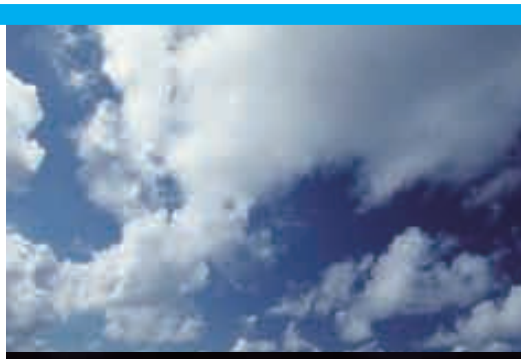
Toshiba solutions

Toshiba offers a solution for all applications: residential, light commercial and larger commercial buildings. Residential indoor units are designed to blend perfectly with all interiors and incorporate advanced filtration systems to deliver optimum indoor air quality. For small commercial premises, products are designed to deliver top performance combined with energy efficiency.

For larger applications, VRF systems combine flexibility, energy efficiency and respect for the environment, with a wide choice of stylish indoor units.

Absolute comfort

Toshiba's commitment to society drives a company-wide focus on attention to the details through every stage of the development process, from design to user field tests. Installations using our products and systems therefore feature a higher standard of indoor air quality, sound levels, energy savings, and environmental awareness.



The next-generation 'i-quality' trio

Dedication to innovation and advanced intelligence fosters the imaginative creativity with which we deliver total value in air conditioning systems.

SMMS i
SUPER MODULAR MULTI SYSTEM

innovation

The new SMMS-i offers innovations in every savings with highly efficient DC twin rotary compressors and advanced vector-controlled inverters boasting COP of 6.41* at 50% partial load.

Notes: *8HP outdoor unit. European model.
Calculated based on JRA4048:2006 specification.

intelligence

The intelligent VRF ensures precise control over cooling or heating for each individual room, delivering consistent temperature to even the furthest room from the unit.

imagination

With flexible layout variations beyond imagination, this extremely versatile system can accommodate up to an impressive 235 metres in length and maximum height of 40 metres between indoor units.

Impressive energy savings

Adopting the highly efficient new DC Twin-rotary compressors and the advanced vector-controlled inverters the SMMS-i realizes a COP of 6,41 (in partial load conditions). This impressive operating performance at constant compressor load contribute to reduce the overall energy consumption.

SMMS-i introduces high-performance outdoor units with 3 compressors and 3 inverters*1

① New DC twin-rotary compressor

Leading the world with Toshiba's own new DC twin-rotary compressor

Three new all inverter DC twin-rotary compressors in 14 and 16HP outdoor unit models feature outstanding capacity under partial load drive, while two are used by the other outdoor unit models (8, 10, 12 HP). These new compressors improve both energy efficiency and comfort levels.

② Fast-calculating vector-controlled inverter

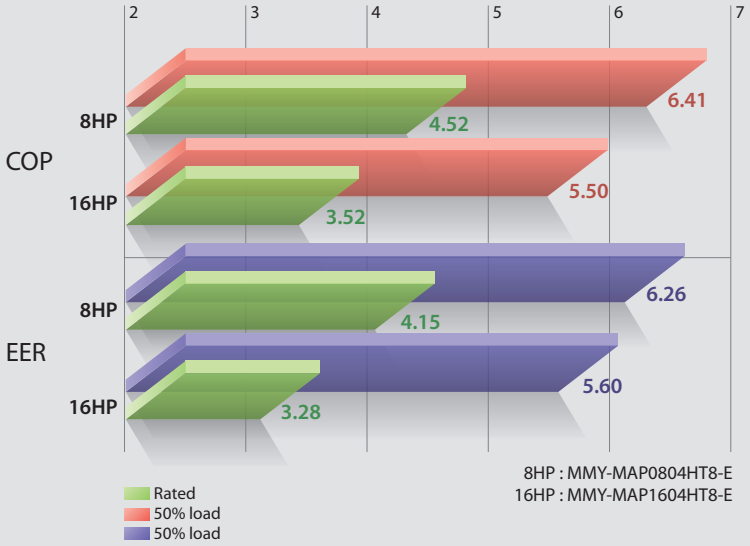
All-inverter control realizes finer control over operation to match the load on the system

Toshiba SMMS-i leads the industry in controlling all 3 compressors with a dedicated inverter board that taps the compressor's full potential to provide smoother operation, and always optimized energy efficiency.

(14HP, 16HP)

*1 14 and 16HP models

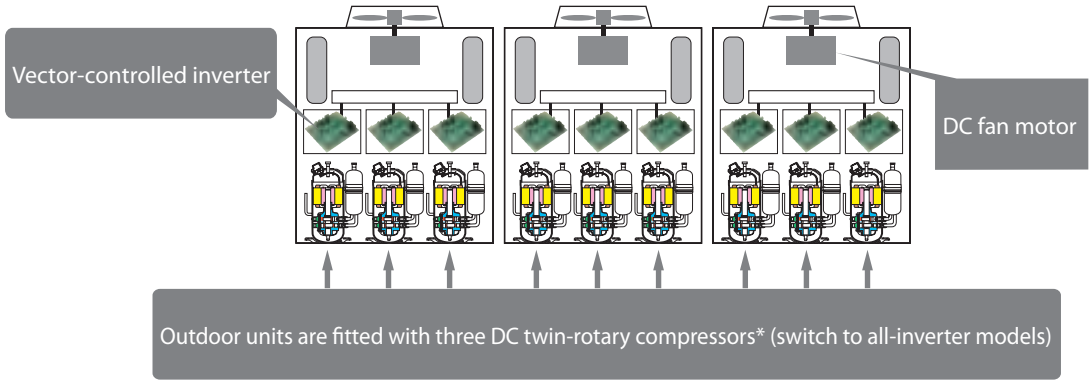
Energy-efficient performance for greater eco-consciousness



8HP : MMY-MAP0804HT8-E
16HP : MMY-MAP1604HT8-E

High-efficiency DC twin-rotary compressors

Adopting the highly efficient new DC twin-rotary compressors and advanced vector-controlled inverters realizes a COP of 6.41 (under 50% partial load).
Greater operating performance is now possible when operating under a constant load.
Every outdoor unit incorporates three new DC twin-rotary compressors and dual-inverter* drives — this is unique to Toshiba and the air conditioning industry.

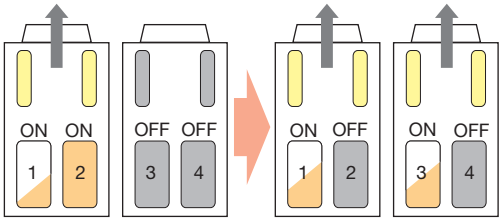


*14, 16HP Outdoor unit

Operational efficiency to lower power consumption

During operation the system determines which heat exchanger can be used most efficiently and selects the compressor rotation speed to deliver the power required, in the most efficient way.
The system distributes the refrigerant flow on more heat exchangers at the same time, in this way the volume of the air exchange surface increases.
Inverters manage the systems continuous operation in order to deliver the same capacity with lower power consumption.

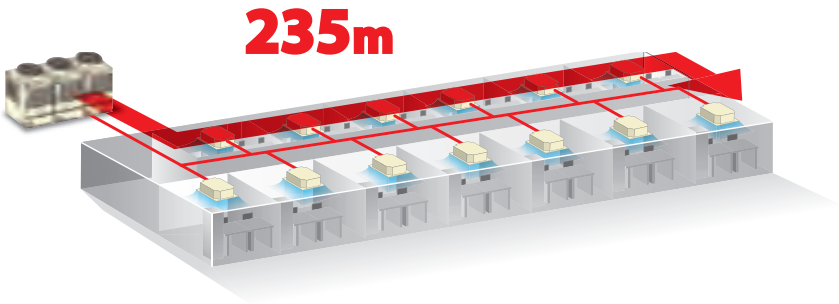
This benefits all occupants by maintaining even room temperatures, as well as the environment by reducing energy consumption.



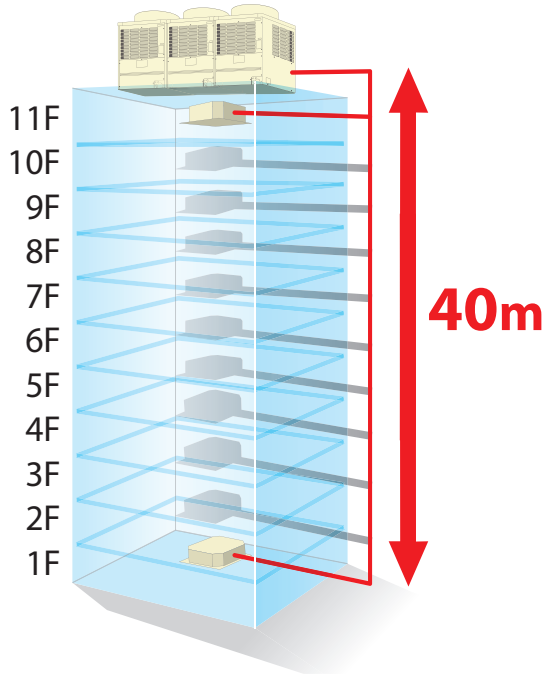
Installation made easy

Piping layout flexibility increases design options

Toshiba SMMSi refrigerant distribution and piping design technology, contribute to reach the outstanding distance of 235m between outdoor units and last indoor unit, and the elevation of 40m between indoor units.
The combination of these two features is a unique advantage for air conditioning layout designers.
They have the freedom to place the indoor units position in building high up to 11 floors.
In case of repartioning or redesign of the internal layouts (offices) this flexibility simplifies the change of the indoor units positions without the need of installing additional outdoor units or move them in a different location.
For specific projects the height may be increased up to 70m if the outdoor unit is positioned at basement level and the indoor units above.
Assuming 3,5 meter of floor height, it is equivalent of a 20 stories building.



Equivalent length



Height difference between outdoor unit an last indoor unit

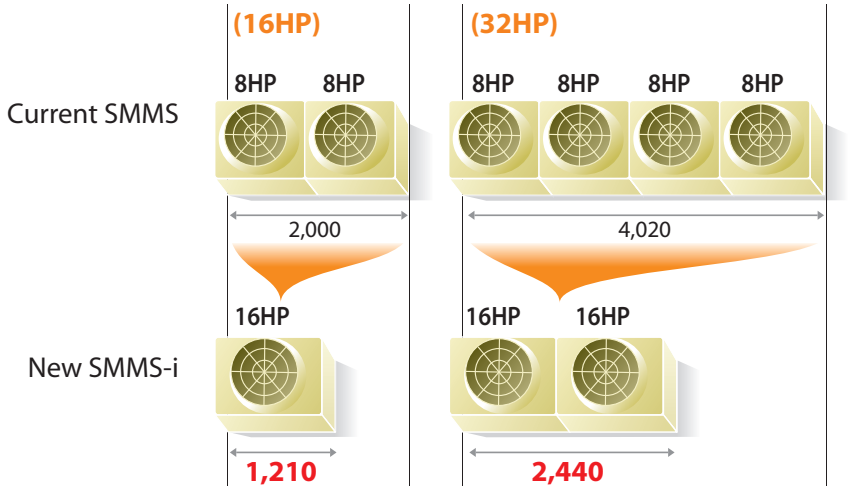
Inspection window

With this easy to open slidig cover, PCB Inverter can be easily accessed without removing the unit panels.
This new feature allows fast access to the inverter board in order to perform maintenance routines, address settings, test run and other operations.

Compact outdoor units size

The introduction of the 16HP single size unit enables the designer of air conditioning plants more freedom in the selection of the necessary installation space.
The overall footprint reduction reaches up to 40%, in units combination.
This solution becomes a paramount advantage in those projects or installations where the overall weight is a major concern and a key driver for the unit choice.

40% footprint reduction



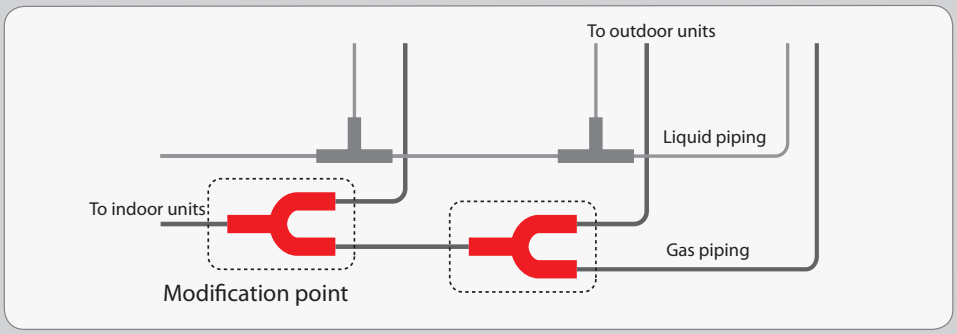
A 16HP system installation now occupies only 2/3 the footprint and weight of two units previously required.

Y shaped gas pipe joints

Installation piping layout is made easier with the introduction of the Y-shape pipe design.

As shown in the picture this clever solution reduces the overall spaced needed compared to the standard T-shape joint.
The overall positive effect is a reduced number of bends and consequently a more tidy piping installation.
Y-shape branching joints on the gas lines between SMMS-i outdoor units results in smoother flow to each branch and contributes to the reliability of the system.

RBM-BT14E (Gas pipe line)



Innovation and technology

New intelligent VRF control

Total system control and consistent room-to-room temperature

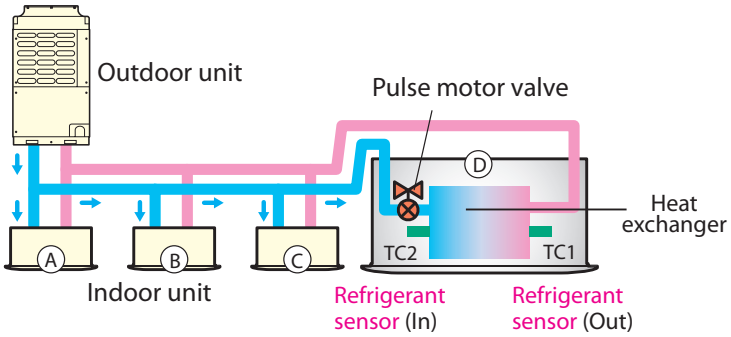
Toshiba's newly developed intelligent VRF control ensures supply of the right amount of refrigerant to satisfy the demands of each room, regardless of the type of indoor unit used, the length or height differences of the pipes.

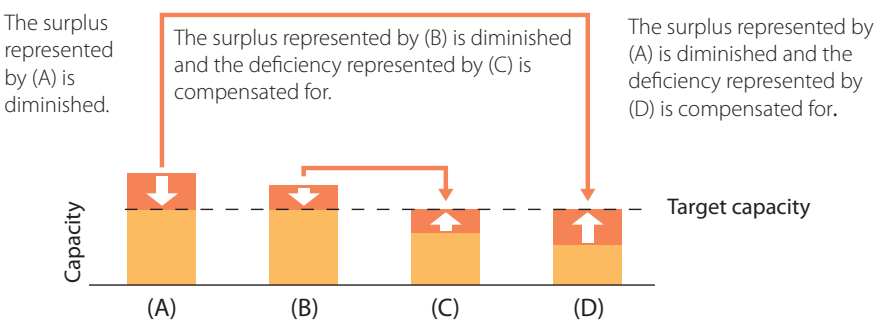
With SMMS-i the refrigerant flow is optimized not only at the level of each fan coil unit but also at total system level.

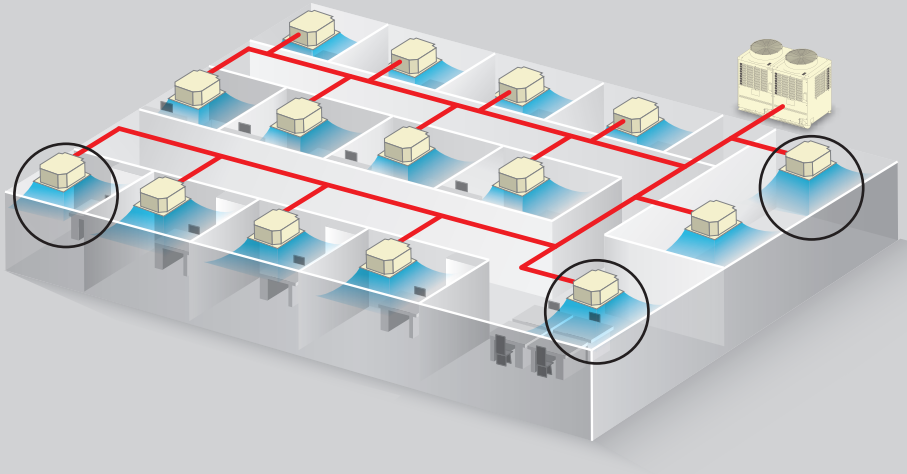
Optimal refrigerant control

– When a multiple number of indoor units are connected on a system, an insufficient or excess amount of refrigerant may be supplied to indoor units depending on the difference in length of the connection pipe from the outdoor unit.
– This is caused by pressure loss and heat leaks as the refrigerant travels through the pipes, resulting in incorrect amounts of refrigerant being supplied to the indoor units.

– Optimal refrigerant flow control featuring intelligent control over the refrigerant sensors and opening rate of individual pulse motor valves realizes stable indoor temperatures throughout a building with height differences of up to 40m between indoor units.

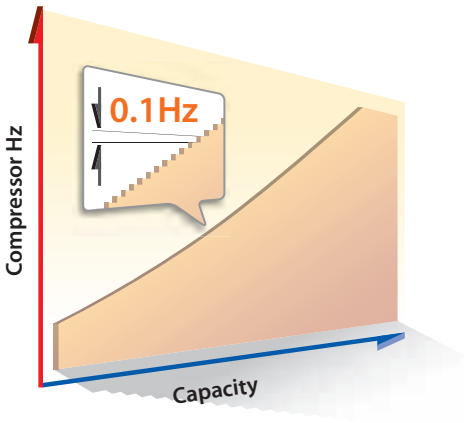






Refrigerant flow is adjusted to maintain consistent individual temperature control

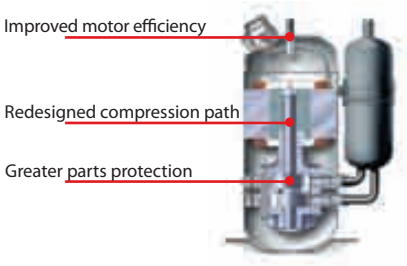
Infinity variable control



Ultra-precise 0.1 Hz control over compressor rotation speed

Infinity variable control adjusts compressor rotation speed in near-seamless 0.1 Hz steps. Responding precisely to the capacity needs of the moment, this fine control minimizes energy loss when changing frequencies, and also creates a comfortable environment subject to minimal temperature variations.

Twin-rotary



Optimization of discharge port positioning and blade thickness reduces the compression loss and friction resistance. Increasing the surface area of the rotor magnets and the addition of slits realize greater efficiency and reduced noise.

Each motor employs a compact and powerful new magnetic rotor and features reduced eddy-current loss.

Powerful Inverter

All-inverter compressor control realizes finer control over operation to match the load on the system

Smooth sine curve

The fast-calculating vector-controlled inverter produces a smooth sine curve that improves operating efficiency.

Circuit board

The vector-controlled inverter quickly converts current into a smooth sine curve to achieve smoother operation of the compressor's DC motor.

Performance and reliability

Comfort in all seasons

Either cooling for the warm season or heating for the cold periods of the year the SMMS-i units provide and maintain the right temperature.
These systems are designed to operate even in extreme outdoor conditions. Down to -20°C in heating mode and up to +43°C in cooling mode.

Operating mode	Min	Max
Heating	-20°C	-15°C
Cooling	-5°C	+43°C

Effective air management

Toshiba engineers have focused on the air management in order to improve the amount and speed of the air throw while reducing to the minimum the noise and the sound of the rotating parts.
Innovations include:

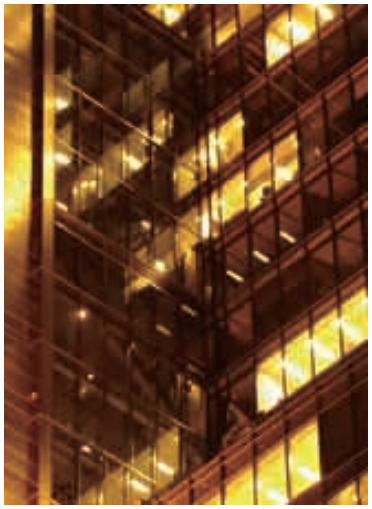
- New patented four baldes fan propeller with a large diameter (740mm)
- New design of the fan guard
- High power motor drive

Better air management contributes to the achievement of high energy efficiency. It also allows higher standard pressure for applications with condensing units installed indoors (city environmnets, etc).

Exceptionally low noise levels

Outdoor unit noise is a combination of two factors: the technology and the material adopted for the moving and vibrating parts and the operation speed of the units.
A new inverter control for the fan motor enables the unit to reduce its speed down to 60 RPM.
The compressors shield and unit casing were designed in order to maximize the containment of the noise produced by the compressor.
The powerful compressor balance load function and the new heat exchanger design enable the SMMS-i system to operate most of the time at lower capacity load. In this condition the running sound of the units is at its lowest levels.

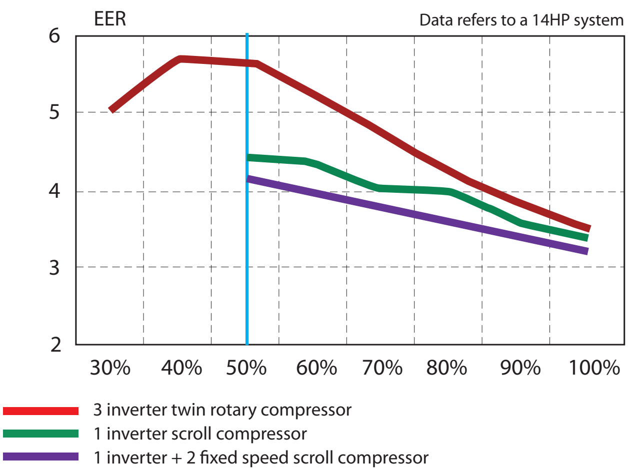
-10dB(A) Sound reduction mode



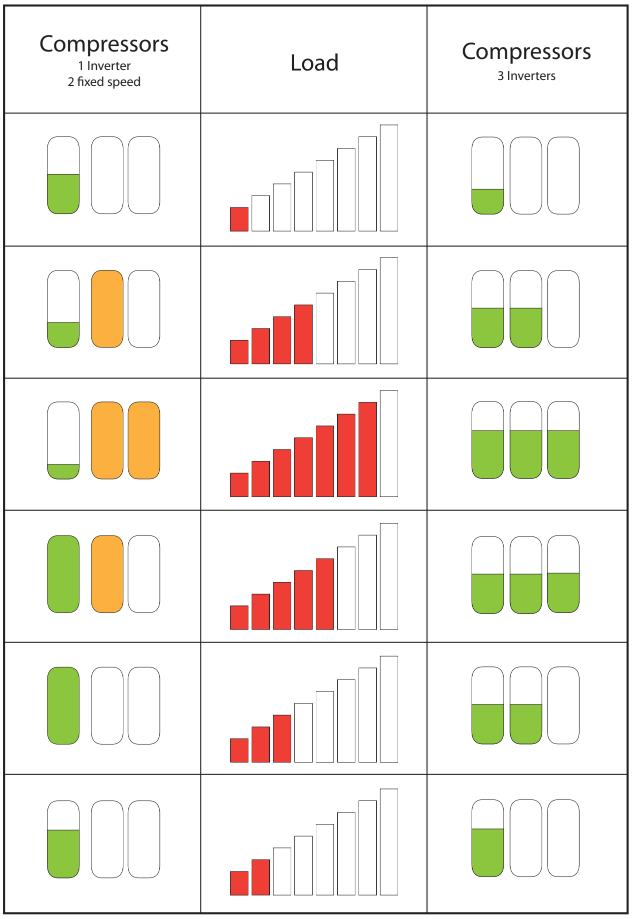
High performance and savings in part load conditions

COP and EER are calculated at nominal value, when the compressors runs at 100% of their capacity.
This condition of maximum load usually happens only for few days a year, therefore most of the time the units are working at medium/low speed.
This means that the most efficient system is not the one with the higher capacity in the peak conditions, but the system that performs better in medium low speeds of the compressor (part load conditions).

Toshiba products are widely know in the market for their ability to deliver high capacity and efficiency at partial load condition. In the new SMMS-i system this ability is further increased with the use of three inverter and three newly designed compressors which precisely manage and distribute the load in the system.



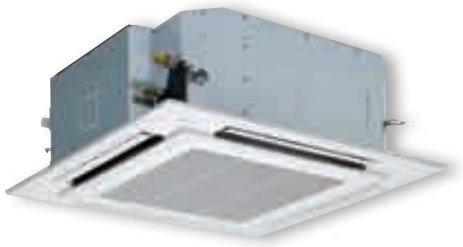
The graph shows how is effective the SMMS-i compared to other VRF systems.
It is important to note that while at full capacity load the efficiency is similar (when the EER and COP are measured) and how effective is at lower capacities, resulting effective even down to 30%: a condition in which other systems cannot operate.



In the table are shown the advantages of the 3 inverter compressors. Instead of a single compressor running at high speed, the load is evenly balanced between three compressors. The capacity load is the same but working at lower speeds the energy consumption is lower.

Indoor unit range

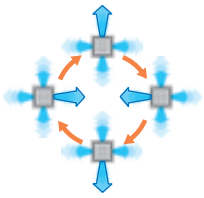
Cassette



The cassette type unit is the preferred solution for offices and buildings with false ceiling installations. Toshiba range of cassette units are suitable for local standard ceiling panels. The choice can be made between products with different air flow configurations: 1, 2, 4 air outlets. The 4 way cassettes feature a selectable automatic air flow pattern in speed and direction. The designer can also select other Cassette types: compact 600x600 4-way, 1-way and the new slimmer 2-way cassette.

Standard swing

Diagonally opposite swing



Turn-around swing

Note: 4-way cassette louver swing patterns

Ducted

Large building applications make extense use of ducts to deliver the air in the different parts of the building.
Toshiba designers have been able to create different units types with high technology features in order to serve different puroposes:
Slim duct – for applications where the ductwork space is limited in height and length (Hotels).
High-static – for applications that require elevated external static pressure (open space).
Standard static - when limited duct work is involved (office).
Fresh air intake – to manage the distribution of fresh air throughout the ductwork of a building.

Toshiba SMMSi has a wide range of indoor units which enable designer and tenants to make the right product choice in terms of aesthetic and performances

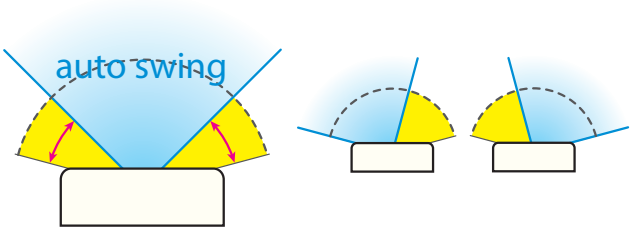
Hi-walls and ceiling type

A preferred solution for buildings where false ceiling cannot be used.
It is the perfect choice for those applications that needs air conditioning in conjuction with the existing conventional radiator heating. Hi-walls for SMMS-i adopt similar high-end design of the units used in residential applications. These type of products are very silent, with personalized air flow control and powerful indoor air quality filters.
Toshiba offer the choice between two models one compact (MMK Serie 2) and one fully featured (MMK Serie 3).

Floor standing consoles

Typical installations where the indoor unit is placed on the floor against one wall or under a window sill. Toshiba range offers solution for:

- Concealed units, where the console is hidden behind a panel in order to be onobtrusive and blend perfectly in the interior.
- Classic cabinets, positioned usually in places of radiators around the perimeter of the building or at the base of the building columns in the room.
- Floor standing concealed cabinets, are slim tall units than can be placed in different positions. This unit feature the additional horizontal swing pattern (from left to right) which make them the preferred solution for corner installations (restaurants).



Capacity data tables

Standard models

	Model Name (MMY-)	Cooling capacity	Heating capacity	Appearance
5 HP	MAP0501HT7	14,0 kW	16,0 kW	
6 HP	MAP0601HT7	16,0 kW	18,0 kW	
8 HP	MAP0804HT8-E	22,4 kW	25,0 kW	
10 HP	MAP1004HT8-E	28,0 kW	31,5 kW	
12 HP	MAP1204HT8-E	33,5 kW	37,5 kW	
14 HP	MAP1404HT8-E	40,0 kW	45,0 kW	
16 HP	MAP1604HT8-E	45,0 kW	50,0 kW	
18 HP	AP1814HT8-E	50,4 kW	56,5 kW	
20 HP	AP2014HT8-E	56,0 kW	63,0 kW	
22 HP	AP2214HT8-E	61,5 kW	69,0 kW	
24 HP	AP2414HT8-E	68,0 kW	76,5 kW	
26 HP	AP2614HT8-E	73,0 kW	81,5 kW	
28 HP	AP2814HT8-E	78,5 kW	88,0 kW	
30 HP	AP3014HT8-E	85,0 kW	95,0 kW	
32 HP	AP3214HT8-E	90,0 kW	100,0 kW	
34 HP	AP3414HT8-E	96,0 kW	108,0 kW	
36 HP	AP3614HT8-E	101,0 kW	113,0 kW	
38 HP	AP3814HT8-E	106,5 kW	119,5 kW	
40 HP	AP4014HT8-E	112,0 kW	127 kW	
42 HP	AP4214HT8-E	118,0 kW	132,0 kW	
44 HP	AP4414HT8-E	123,5 kW	138,0 kW	
46 HP	AP4614HT8-E	130,0 kW	145,0 kW	
48 HP	AP4814HT8-E	135,0 kW	150,0 kW	

High efficiency models

	Model Name (MMY-)	Cooling capacity	Heating capacity	Appearance
16 HP	AP1624HT8-E	45,0 kW	50,0 kW	
24 HP	AP2404HT8-E	68,0 kW	76,5 kW	
26 HP	AP2624HT8-E	73,0 kW	81,5 kW	
28 HP	AP2824HT8-E	78,5 kW	88,0 kW	
30 HP	AP3024HT8-E	85,0 kW	95,0 kW	
32 HP	AP3224HT8-E	90,0 kW	100,0 kW	
34 HP	AP3424HT8-E	96,0 kW	108,0 kW	
36 HP	AP3624HT8-E	101,0 kW	113,0 kW	
38 HP	AP3824HT8-E	106,5 kW	119,5 kW	
40 HP	AP4024HT8-E	112,0 kW	127 kW	
42 HP	AP4224HT8-E	118,0 kW	132,0 kW	
44 HP	AP4424HT8-E	123,5 kW	138,0 kW	
46 HP	AP4624HT8-E	130,0 kW	145,0 kW	
48 HP	AP4824HT8-E	135,0 kW	150,0 kW	

Indoor units number

Standard models	High efficiency models	Max Number of indoor units
5 HP		8
6 HP		10
8 HP		13
10 HP		16
12 HP		20
14 HP		23
16 HP	16 HP=8+8	27
18 HP=10+8		30
20 HP=10+10		33
22 HP=12+10		37
24 HP=12+12	24 HP=8+8+8	40
26 HP=16+10	26 HP=10+8+8	43
28 HP=16+12	28 HP=10+10+8	47
30 HP=16+14	30 HP=10+10+10	48
32 HP=16+16	32 HP=8+8+8+8	48
34 HP=12+12+10	34 HP=10+8+8+8	48
36 HP=12+12+12	36 HP=10+10+8+8	48
38 HP=16+12+10	38 HP=10+10+10+8	48
40 HP=16+12+12	40 HP=10+10+10+10	48
42 HP=16+14+12	42 HP=12+10+10+10	48
44 HP=16+16+12	44 HP=12+12+10+10	48
46 HP=16+16+14	46 HP=12+12+12+10	48
48 HP=16+16+16	48 HP=12+12+12+12	48

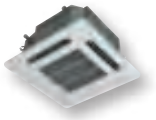
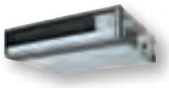
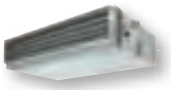
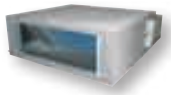
Figures in tables above are of 50 Hz units. See the data book for figures of 60Hz units.
Preliminary values noted for cooling and heating capacity.
There are also units with only cooling capacity.
Power: 3-phase 50 Hz 400V (380 ~ 415V)
Rated conditions Cooling: Indoor air temperature 27°C DB/19°C WB, outdoor air temperature
35°C DBHeating: Indoor air temperature 20°C DB, outdoor air temperature 7°C DB/6°C WB
The standard piping means that main pipe length is 5 m, branching pipe length 2,5 m of branch piping connected with a 0 meter height.
The source voltage must not fluctuate more than ±10%.
The maximum total piping length indicates the sum of one-way piping lengths on the

liquid side or gas side.

Combination data table

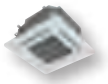
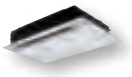
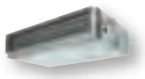
	Standard models				High efficiency models			
	Module combination	Dimensions	EER	COP	Module combination	Dimensions	EER	COP
16 HP	16	1830 x 1210 x 780	3,28	3,52	8 8	1830 x 1980 x 780	4,13	4,52
18 HP	10 8	1830 x 1980 x 780	3,93	4,34				
20 HP	10 10	1830 x 1980 x 780	3,78	4,20				
22 HP	12 10	1830 x 1980 x 780	3,63	3,90				
24 HP	12 12	1830 x 1980 x 780	3,46	3,62	8 8 8	1830 x 2970 x 780	4,10	4,45
26 HP	16 10	1830 x 2200 x 780	3,46	3,76	10 8 8	1830 x 2970 x 780	3,99	4,39
28 HP	16 12	1830 x 2200 x 780	3,38	3,57	10 10 8	1830 x 2970 x 780	3,87	4,29
30 HP	16 14	1830 x 2420 x 780	3,37	3,65	10 10 10	1830 x 2970 x 780	3,74	4,18
32 HP	16 16	1830 x 2420 x 780	3,28	3,52	8 8 8 8	1830 x 3960 x 780	4,13	4,52
34 HP	12 12 10	1830 x 2970 x 780	3,55	3,78	10 8 8 8	1830 x 3960 x 780	4,00	4,37
36 HP	12 12 12	1830 x 2970 x 780	3,49	3,66	10 10 8 8	1830 x 3960 x 780	3,93	4,34
38 HP	16 12 10	1830 x 3190 x 780	3,47	3,72	10 10 10 8	1830 x 3960 x 780	3,85	4,26
40 HP	16 12 12	1830 x 3190 x 780	3,41	3,57	10 10 10 10	1830 x 3960 x 780	3,78	4,17
42 HP	16 14 12	1830 x 3410 x 780	3,39	3,65	12 10 10 10	1830 x 3960 x 780	3,68	4,04
44 HP	16 16 12	1830 x 3410 x 780	3,34	3,55	12 12 10 10	1830 x 3960 x 780	3,61	3,90
46 HP	16 16 14	1830 x 3630 x 780	3,34	3,61	12 12 12 10	1830 x 3960 x 780	3,52	3,76
48 HP	16 16 16	1830 x 3630 x 780	3,28	3,52	12 12 12 12	1830 x 3960 x 780	3,48	3,68

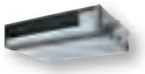
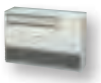
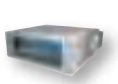
Indoor units range

Model Type		HP	0,8	1,0	1,3	1,7	2,0	2,5	3,0	3,2	4,0	5,0	6,0	8,0	10,0
		kW	2,2	2,8	3,6	4,5	5,6	7,1	8,0	9,0	11,2	14,0	16,0	22,4	28
Cassette															
Compact 4-way MMU-AP(...)MH			●	●	●	●	●								
4-way MMU-AP(...)H				●	●	●	●	●	●	●	●	●	●		
2-way MMU-AP(...)WH	New 		●	●	●	●	●	●	●	●	●	●	●		
1-way MMU-AP(...)YH/SH			●	●	●	●	●	●							
Duct															
Slim MMD-AP(...)SPH			●	●	●	●	●								
Concealed MMD-AP(...)BH			●	●	●	●	●	●	●	●	●	●	●		
Concealed High Static MMD-AP(...)H							●	●	●		●	●		●	●
Fresh air intake MMD-AP(...)HFE												●		●	●
Ceiling MMC-AP(...)H						●	●	●	●		●	●			
Floor Standing															
Cabinet MML-AP(...)H			●	●	●	●	●	●							
Concealed MML-AP(...)BH			●	●	●	●	●	●							
Tall MMF-AP(...)H						●	●	●	●		●	●	●		
High Wall			●	●	●										
Serie 2 MMK-AP(...)2H															
Serie 3 MMK-AP(...)3H			●	●	●	●	●	●							
		HP	0,8	1,0	1,3	1,7	2,0	2,5	3,0	3,2	4,0	5,0	6,0	8,0	10,0
		kW	2,2	2,8	3,6	4,5	5,6	7,1	8,0	9,0	11,2	14,0	16,0	22,4	28

Please contact local distributor for detailed combinations

Indoor units range

Model Type	Model Name	Capacity Code	Cooling cap. (kW)	Heating cap. (kW)
4-way cassette 	MMU-AP0092H	1,00	2,80	3,20
	MMU-AP0122H	1,25	3,60	4,00
	MMU-AP0152H	1,70	4,50	5,00
	MMU-AP0182H	2,00	5,60	6,30
	MMU-AP0242H	2,50	7,10	8,00
	MMU-AP0272H	3,00	8,00	9,00
	MMU-AP0302H	3,20	9,00	10,00
	MMU-AP0362H	4,00	11,20	12,50
	MMU-AP0482H	5,00	14,00	16,00
	MMU-AP0562H	6,00	16,00	18,00
Compact 4-way cassette 	MMU-AP0071MH	0,80	2,20	2,50
	MMU-AP0091MH	1,00	2,80	3,20
	MMU-AP0121MH	1,25	3,60	4,00
	MMU-AP0151MH	1,70	4,50	5,00
	MMU-AP0181MH	2,00	5,60	6,30
2-way cassette 	AP0072WH	0,8	2,2	2,5
	AP0092WH	1,0	2,8	3,2
	AP0122WH	1,3	3,6	4,0
	AP0152WH	1,7	4,5	5,0
	AP0182WH	2,0	5,6	6,3
	AP0242WH	2,5	7,1	8,0
	AP0272WH	3,0	8,0	9,0
	AP0302WH	3,2	9,0	10,0
	AP0362WH	4,0	11,2	8,0
	AP0482WH	5,0	14,0	16,0
	AP0562WH	6,0	16,0	18,0
1-way cassette 	MMU-AP0071YH	0,80	2,20	2,50
	MMU-AP0091YH	1,00	2,80	3,20
	MMU-AP0121YH	1,25	3,60	4,00
	MMU-AP0152SH	1,70	4,50	5,00
	MMU-AP0182SH	2,00	5,60	6,30
	MMU-AP0242SH	2,50	7,10	8,00
Concealed duct, stand type 	MMD-AP0071BH	0,80	2,20	2,50
	MMD-AP0091BH	1,00	2,80	3,20
	MMD-AP0121BH	1,25	3,60	4,00
	MMD-AP0151BH	1,70	4,50	5,00
	MMD-AP0181BH	2,00	5,60	6,30
	MMD-AP0241BH	2,50	7,10	8,00
	MMD-AP0271BH	3,00	8,00	9,00
	MMD-AP0301BH	3,20	9,00	10,00
	MMD-AP0361BH	4,00	11,20	12,50
	MMD-AP0481BH	5,00	14,00	16,00
	MMD-AP0561BH	6,00	16,00	18,00
Concealed duct, high static pressure 	MMD-AP0181H	2,00	5,60	6,30
	MMD-AP0241H	2,50	7,10	8,00
	MMD-AP0271H	3,00	8,00	9,00
	MMD-AP0361H	4,00	11,20	12,50
	MMD-AP0481H	5,00	14,00	16,00
	MMD-AP0721H	8,00	22,40	25,00
	MMD-AP0961H	10,00	28,00	31,50

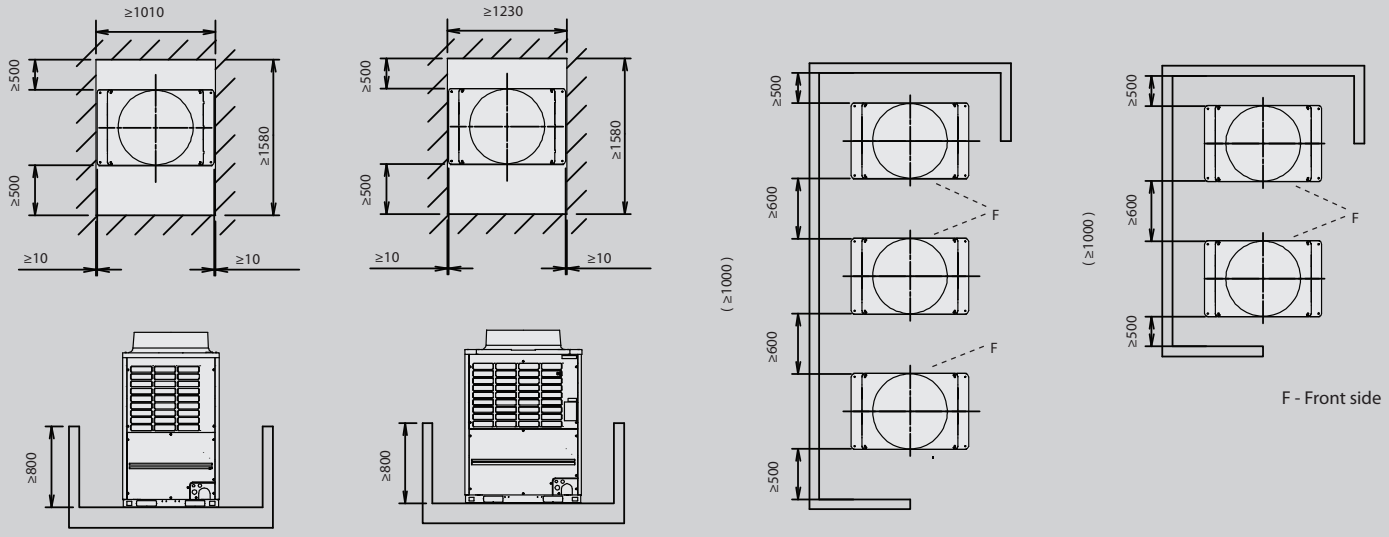
Model Type	Model Name	Capacity Code	Cooling cap. (kW)	Heating cap. (kW)
Slim Duct 	MMD-AP0071SPH	0,80	2,20	2,50
	MMD-AP0091SPH	1,00	2,80	3,20
	MMD-AP0121SPH	1,25	3,60	4,00
	MMD-AP0151SPH	1,70	4,50	5,00
	MMD-AP0181SPH	2,00	5,60	6,30
Under-ceiling 	MMC-AP0151H	1,70	4,50	5,00
	MMC-AP0181H	2,00	5,60	6,30
	MMC-AP0241H	2,50	7,10	8,00
	MMC-AP0271H	3,00	8,00	9,00
	MMC-AP0361H	4,00	11,20	12,50
	MMC-AP0481H	5,00	14,00	16,00
High-wall compact 	MMK-AP0072H	0,80	2,20	2,50
	MMK-AP0092H	1,00	2,80	3,20
	MMK-AP0122H	1,25	3,60	4,00
High-wall 	MMK-AP0073H	0,80	2,20	2,50
	MMK-AP0093H	1,00	2,80	3,20
	MMK-AP0123H	1,25	3,60	4,00
	MMK-AP0153H	1,70	4,50	5,00
	MMK-AP0183H	2,00	5,60	6,30
	MMK-AP0243H	2,50	7,10	8,00
Floor standing cabinet type 	MML-AP0071H	0,80	2,20	2,50
	MML-AP0091H	1,00	2,80	3,20
	MML-AP0121H	1,25	3,60	4,00
	MML-AP0151H	1,70	4,50	5,00
	MML-AP0181H	2,00	5,60	6,30
	MML-AP0241H	2,50	7,10	8,00
Floor standing Concealed type 	MML-AP0071BH	0,80	2,20	2,50
	MML-AP0091BH	1,00	2,80	3,20
	MML-AP0121BH	1,25	3,60	4,00
	MML-AP0151BH	1,70	4,50	5,00
	MML-AP0181BH	2,00	5,60	6,30
	MML-AP0241BH	2,50	7,10	8,00
Tall floor-standing 	MMF-AP0151H	1,70	4,50	5,00
	MMF-AP0181H	2,00	5,60	6,30
	MMF-AP0241H	2,50	7,10	8,00
	MMF-AP0271H	3,00	8,00	9,00
	MMF-AP0361H	4,00	11,20	12,50
	MMF-AP0481H	5,00	14,00	16,00
	MMF-AP0561H	6,00	16,00	18,00
Fresh Air Intake 	MMD-AP0481HFE	5,00	14,00	8,90
	MMD-AP0721HFE	8,00	22,40	13,90
	MMD-AP0961HFE	10,00	28,00	17,40

Outdoor unit	CO	MMY-	MAP0501T8-E	MAP0601T8-E	MAP0804T8-E	MAP1004T8-E	MAP1204T8-E	MAP1404T8-E	MAP1604T8-E
	HP	MMY-	MAP0501HT8-E	MAP0601HT8-E	MAP0804HT8-E	MAP1004HT8-E	MAP1204HT8-E	MAP1404HT8-E	MAP1604HT8-E
			5 HP	6 HP	8 HP	10 HP	12 HP	14 HP	16 HP
Cooling capacity[1]	kW		14,0	16,0	22,4	28,0	33,5	40	45
Power input	kW	CO	3,65	4,64	5,40	7,41	9,55	11,50	13,70
EER	W/W		3,84	3,45	4,15	3,78	3,51	3,48	3,28
Running current	A	CO	5,85	7,28	8,50	11,40	14,70	17,70	20,80
Heating capacity2	kW		16,0	18,0	25,0	31,5	37,5	45,0	50,0
Power input	kW	HP	3,84	4,56	5,53	7,50	10,20	11,20	14,20
COP	W/W		4,17	3,95	4,52	4,20	3,68	4,02	3,52
Running current	A	HP	6,09	7,08	8,80	11,80	16,00	17,60	22,00
Maximum overcurrent protection3	A		20	20	32	32	40	40	50
Air Flow	m^3/h		9000	9000	9900	10500	11600	12000	13000
Air Flow	l/s		2500	2500	2750	2917	3222	3333	3611
Sound Power Level	dB(A)	HP	75	76	78	79	83	83	84
Sound pressure level	dB(A)	HP	55	56	56	58	62	62	64
Sound Power Level	dB(A)	CO	75	76	77	78	82	82	83
Sound pressure level	dB(A)	CO	55	56	55	57	59	60	62
External Static pressure avalaible	Pa		35	35	60	60	50	40	40
Operating range - db	°C	C	-5÷43	-5÷43	-5÷43	-5÷43	-5÷43	-5÷43	-5÷43
Operating range - wb4	°C	H	-20÷15	-20÷15	-20÷15	-20÷15	-20÷15	-20÷15	-20÷15
Dimensions (h x w x d)	mm		1800 x 990 x750	1800 x 990 x750	1830 x 990 x 780	1830 x 990 x 780	1830 x 990 x 780	1830 x 1210 x 780	1830 x 1210 x 780
Weight	kg	HP	228	228	242	242	242	330	330
		CO	227	227	241	241	241	330	330
Compressor type			Twin Rotary	Twin Rotary	Twin Rotary	Twin Rotary	Twin Rotary	Twin Rotary	Twin Rotary
Refrigerant charge R410A	kg		8,5	8,5	11,5	11,5	11,5	11,5	11,5
Suction line type - diameter			Flare - 5/8"	Brazed - 3/4"	Brazed - 7/8"	Brazed - 7/8"	Brazed -1-1/8"	Brazed -1-1/8"	Brazed -1-1/8"
Liquid line type - diameter			Flare - 3/8"	Flare - 3/8"	Flare - 1/2"	Flare - 1/2"	Flare - 1/2"	Flare - 5/8"	Flare - 5/8"
Farthest piping equivalent length	m		175	175	235	235	235	235	235
Farthest piping actual length[5]	m		150	150	190	190	190	190	190
Maximum pipe length	m		300	300	500	500	500	500	500
Maximum lift (indoor unit above/below)6	m		40/50	40/50	70/40	70/40	70/40	70/40	70/40
Power supply	V-ph-Hz		400(380-415V)-3-50						

1) based on an indoor air temperature of 27°C db/19°C wb and an outdoor air temperature of 35°db
2) based on an indoor air temperature of 20°C db and an outdoor air temperature of 7°db/6°C wb
3) if outdoor units are combined, refer to the installation manual
4) The unit operates down to an outdoor temperature of -20°C, however considerable performance decrease will be expected below -15°C. Consider installation location/surroundings and system design when expected to operate between -15°C and -20°C.
5) Less than 34HP or less combination: 300m
6) if the height difference between indoor units exceeds 3 m and if the indoor unit is above, max, lift is reduced to 30 m

CO = cooling mode
HP = heating mode

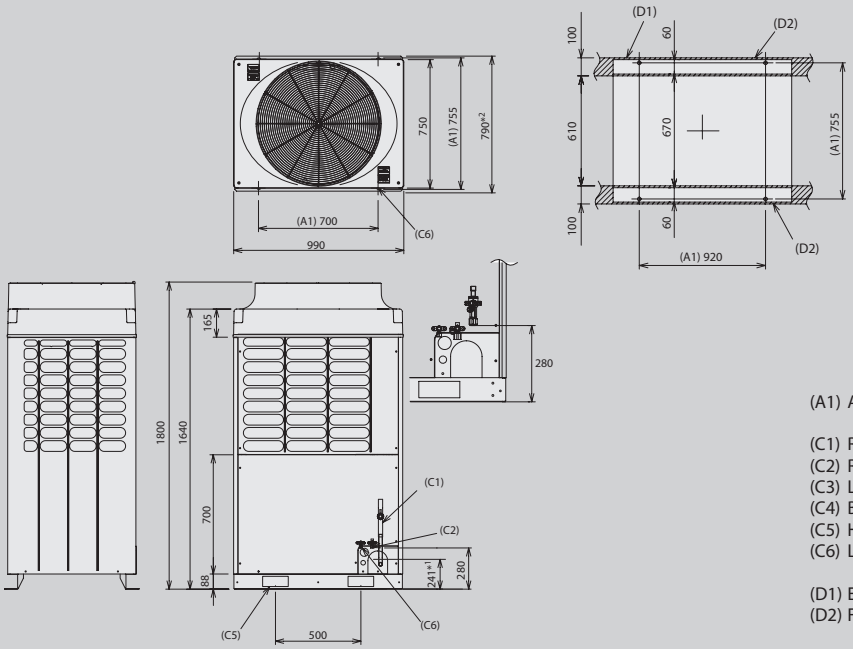
Space for installation and servicing



8HP / 10 HP / 12HP

14HP / 16 HP

Model: MMY-MAP0501, MAP0601 (SMMS)



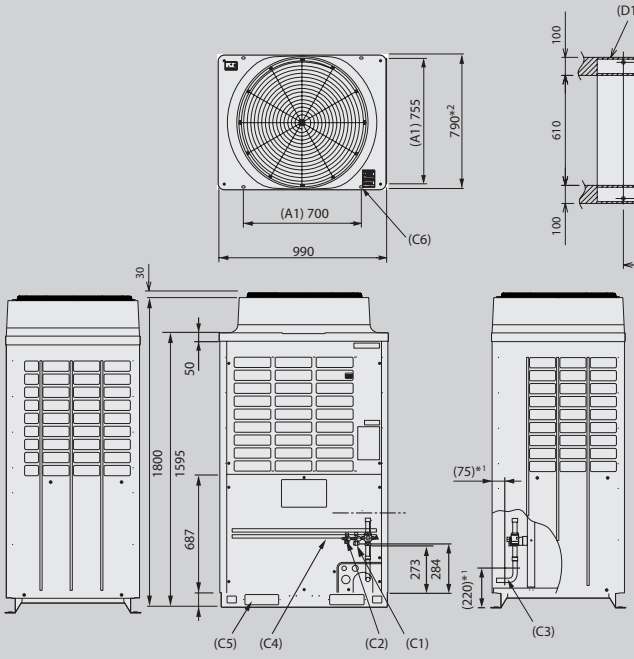
(A1) Anchor bolt pitch

(C1) Refrigerant pipe connecting port Gas side [A]
(C2) Refrigerant pipe connecting port Liquid side [B]
(C3) L-shape pipe
(C4) Balancing pipe connection port Ø 9.5
(C5) Hole for handling goods (2-60x150)
(C6) Long hole (4-15x20)

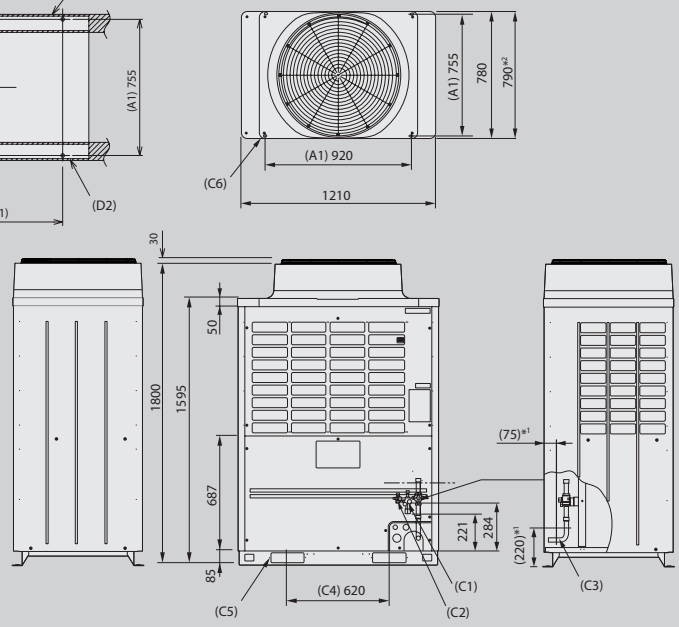
(D1) Earth-attaching section of bottom plate
(D2) Foundation

*1 Recommended cutting position of L-shape pipe
*2 Including steadk leg

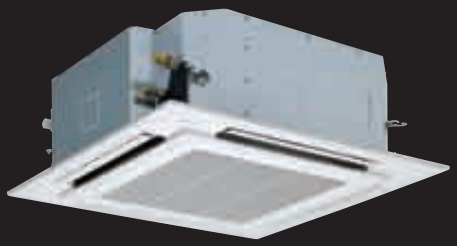
Model: MMY-MAP0804, MAP1004, MAP1204



Model: MMY-MAP1404, MAP1604



Applied model	MAP0501T8	MAP0601T8	MAP0804	MAP1004	MAP1204	MAP1404	MAP1604
A Ø	15,9	15,9	22,2	22,2	28,6	28,6	28,6
B Ø	9,5	9,5	12,7	12,7	12,7	15,9	15,9



4-way cassette

Features

This new 4-way cassette is unobtrusive and flexible and can easily blend in with any room interior.

Thanks to the new ceiling panel, it grants uniform air distribution, providing total comfort. This system is ideal for small commercial applications.

Key features

Two louver shape options: straight flow louver and wide flow louver; optimum air distribution.

Light-weight unit, for easy and quick installation.

Built-in drain pump (up to 850mm lift).

Simple maintenance, thanks to the Selfcleaning function of the coil (aqua resin coating) and the Ag-ion tip for anti-mould in drain cap.

Individual setting of louver position: 3 different Swing modes: standard, diagonally opposite, turn-around.

Optional wireless remote control RBCAX31U(W)-E.

MMU-AP*2H**

RBC-U31PG(W)-E

RBC-U31PGS(W)-E

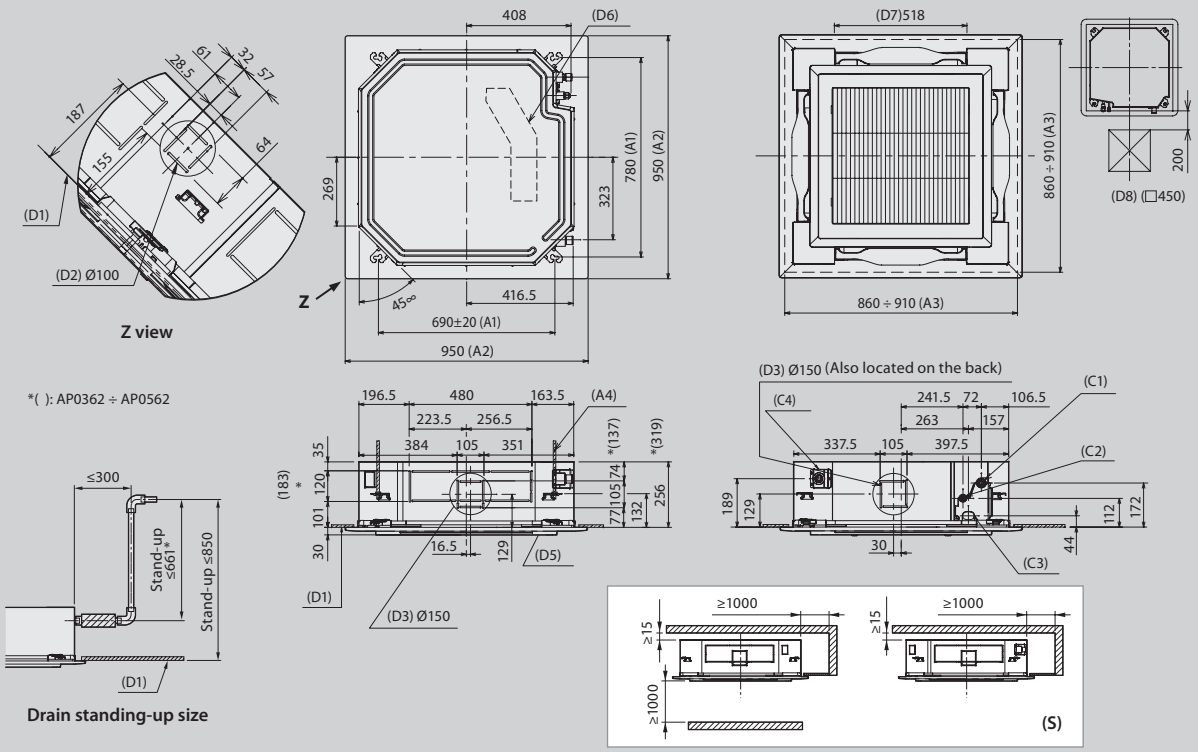
RBC-U31PGS(WS)-E

Technical specifications **heat pump**

Indoor unit	MMU-	AP0092H	AP0122H	AP0152H	AP0182H	AP0242H	AP0272H	AP0302H	AP0362H	AP0482H	AP0562H
Cooling capacity	kW	2,8	3,6	4,5	5,6	7,1	8,0	9,0	11,2	14,0	16,0
Heating capacity	kW	3,2	4,0	5,0	6,3	8,0	9,0	10,0	12,5	16,0	18,0
Power consumption	kW	0,021		0,023	0,026	0,036		0,043	0,088	0,112	0,112
Running current	A	0,23		0,27	0,29	0,38		0,43	0,73	0,88	0,88
Starting current	A	0,30		0,33	0,36	0,42		0,59	0,87	1,23	1,26

Indoor unit	MMU-	AP0092H	AP0122H	AP0152H	AP0182H	AP0242H	AP0272H	AP0302H	AP0362H	AP0482H	AP0562H
Air flow (h/l)	m^3/h	800/680		930/790	1050/800	1290/800		1320/850	1970/1070	2130/1130	2130/1230
Air flow (h/l)	l/s	222/188		258/219	291/222	357/222		366/235	546/296	590/313	590/341
Sound pressure level (h/m/l)	dB(A)	30/29/27		31/29/27	32/29/27	35/31/28		38/33/30	43/38/32	46/38/33	46/40/33
Sound power level (h/m/l)	dB(A)	45/44/42		46/44/42	47/44/42	50/46/43		53/48/45	58/53/47	61/53/48	61/55/48
Dimensions (h × w × d)	mm	256 × 840 × 840							319 × 840 × 840		
Weight	kg	18		20		20			25		
Panel dimensions (h × w × d)	mm	30 × 950 × 950									
Panel weight	kg	4									
Air filter		standard filter attached (long life filter)									
Connecting pipe (gas – liquid)		3/8" – 1/4"		1/2" – 1/4"		5/8" – 3/8"			5/8" – 3/8"		
Drain port diameter	mm	25		25		25			25		
Power supply	V-ph-Hz	220/240-1-50		220/240-1-50		220/240-1-50			220/240-1-50		

All sizes



Drain standing-up size

(A1) Hanging bolt pitch
(A2) Panel external dimension
(A3) Ceiling open dimension
(A4) Hanging bolt M10 or W3/8 procured locally

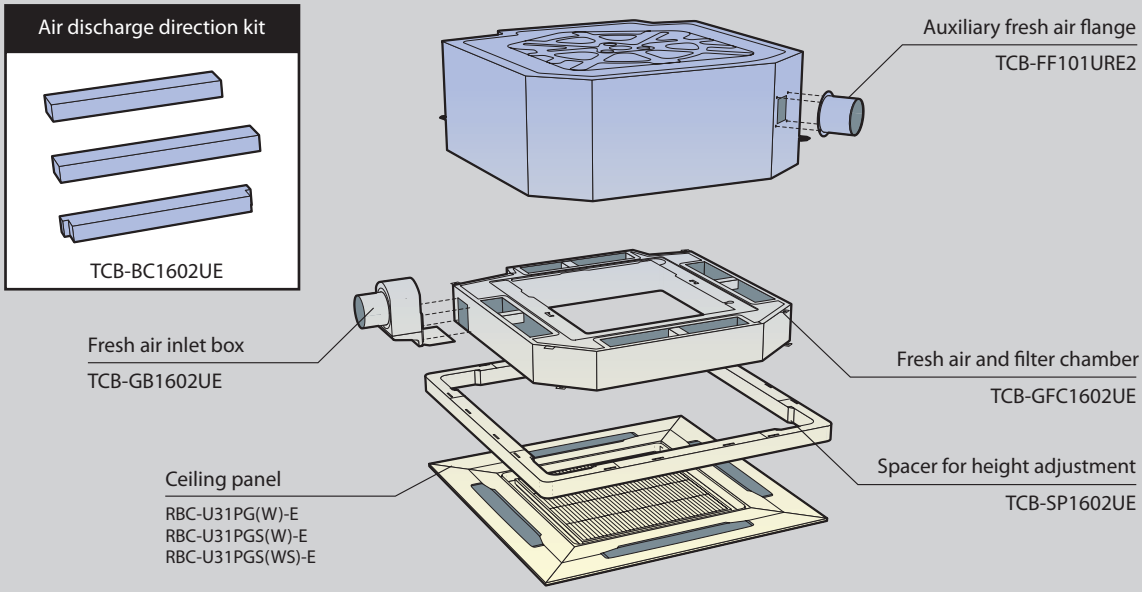
(C1) Refrigerant pipe connecting port (Gas side)
(C2) Refrigerant pipe connecting port (Liquid side)
(C3) Wiring connection port
(C4) Drain discharge port
(D1) Bottom face of ceiling
(D2) Knockout for fresh air intake

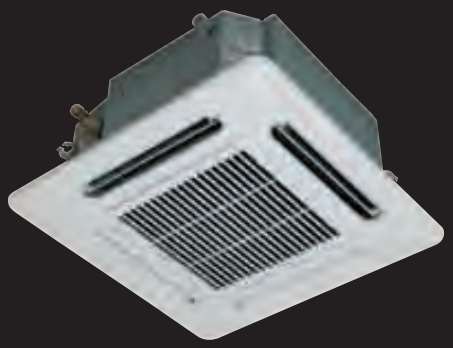
(D3) For branch duct knockout square hole
(D5) Ceiling panel (Sold separately)
(D6) Electric parts box
(D7) Air outlet
(D8) Check port

(S) Space required for installation and servicing

(Unit: mm)

Options





MMU-AP***1MH

Compact 4-way cassette

Features

The compact 4-way cassette suits all the standard 600 × 600 mm grid ceiling, to allow simple and easy installation and maintenance.

Its sophisticated design fits with any room interior, where design is as important as the functionality.

Draft prevention and clean ceiling functions make this unit ideal for the most demanding application.

Key features

Slimline dimensions make this cassette suitable for any kind of installation.

All the capacity sizes have the same physical dimensions so the installation looks much smarter and consistent.

Easy maintenance: access to the corner pockets is easy and enables convenient installation and adjustment for perfect ceiling fitting.

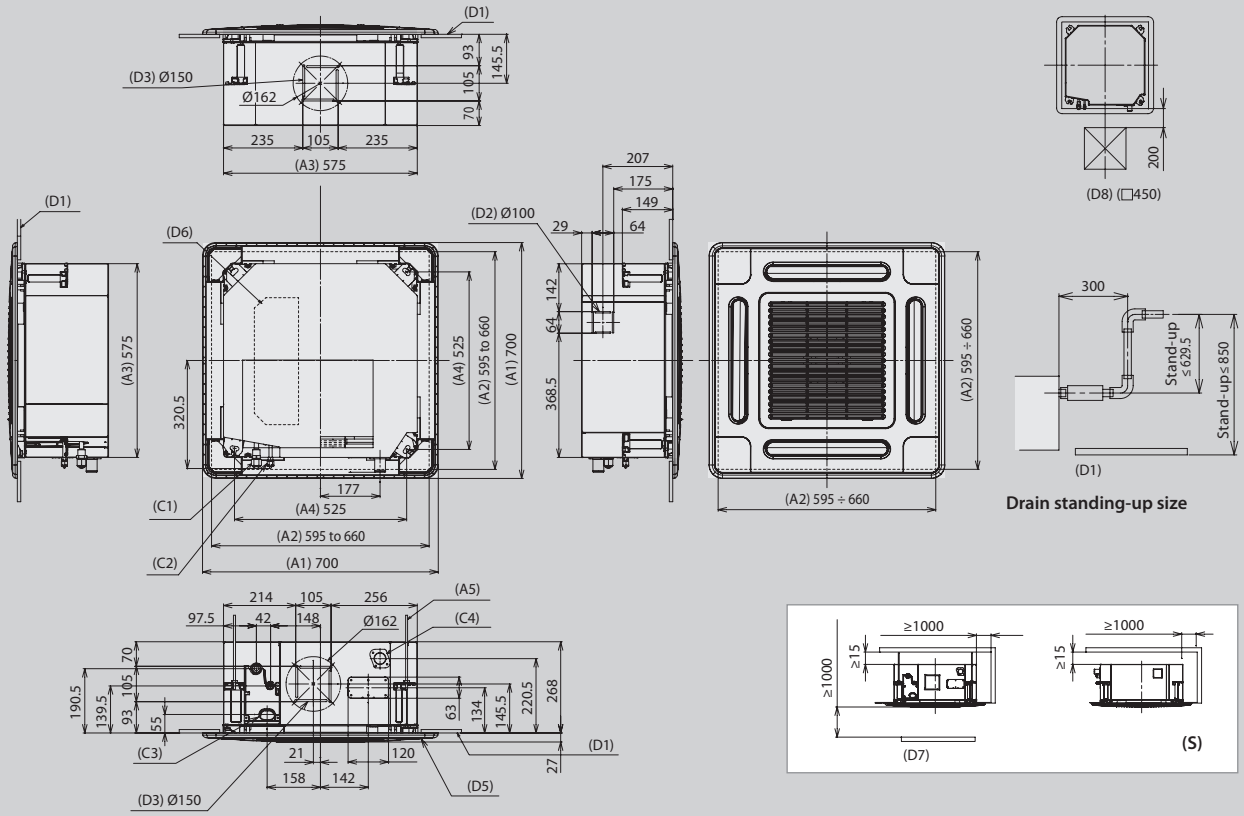
Wireless remote controllers with TCB-AX21E2 stand alone receiver can be connected.

Technical specifications **heat pump**

Indoor unit	MMU-	AP0071MH	AP0091MH	AP0121MH	AP0151MH	AP0181MH
Cooling capacity	kW	2,2	2,8	3,6	4,5	5,6
Heating capacity	kW	2,5	3,2	4,0	5,0	6,3
Power consumption	kW	0,034	0,036	0,038	0,041	0,052
Running current	A	0,28	0,30	0,31	0,34	0,42
Starting current	A	0,49	0,52	0,54	0,59	0,73

Indoor unit	MMU-	AP0071MH	AP0091MH	AP0121MH	AP0151MH	AP0181MH
Air flow (h/l)	m^3/h	552/378	570/378	594/402	660/468	762/522
Air flow (h/l)	l/s	153/105	158/105	165/112	183/130	211/145
Sound pressure level (h/m/l)	dB(A)	36/32/28	37/33/28	37/33/29	40/35/30	44/39/34
Sound power level (h/m/l)	dB(A)	51/47/43	52/48/43	52/48/44	55/50/45	59/54/49
Dimensions (h × w × d)	mm	268 × 575 × 575				
Weight	kg	17				
Panel dimensions (h × w × d)	mm	27 × 700 × 700				
Panel weight	kg	3				
Connecting pipe (gas – liquid)		3/8″ – 1/4″	3/8″ – 1/4″	3/8″ – 1/4″	1/2″ – 1/4″	1/2″ – 1/4″
Drain port diameter	mm	25	25	25	25	25
Power supply	V-ph-Hz	220/240-1-50				

All sizes



(A1) Panel external dimension
(A2) Ceiling open dimension
(A3) Unit external dimension
(A4) Hanging bolt pitch
(A5) Hanging bolt M10 or W3/8 procured locally

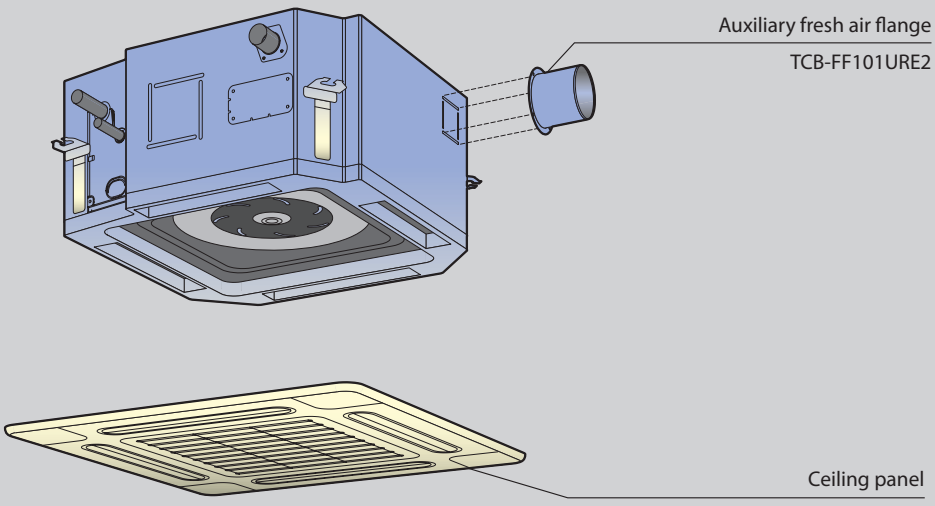
(C1) Refrigerant pipe connecting port (Gas side)
(C2) Refrigerant pipe connecting port (Liquid side)
(C3) Wiring connection port
(C4) Drain discharge port

(D1) Bottom face of ceiling
(D2) Knockout for fresh air intake
(D3) For branch duct knockout square hole
(D5) Ceiling panel (Sold separately)
(D6) Electric parts box
(D7) Obstacle
(D8) Check port
(D9) Indoor unit

(S) Space required for installation and servicing

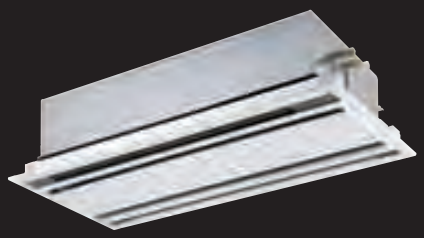
(Unit: mm)

Options



Auxiliary fresh air flange
TCB-FF101URE2

Ceiling panel
RBC-UM11PG(W)-E



MMU-AP***2WH

NEW

2-way Air Discharge Cassette Type

Features

Slim, compact, light-weight and easy to install, it fits discretely any room interior.

In addition, thanks to its silent operation, this model creates a very pleasant, quiet and comfortable environment.

With its new white decoration panel this new unit fits in ceilings where the standard 4-way cassette is already installed.

Key features

Compact dimensions (height 295mm) and limited weight (19 kg) for units up to 4,5 kW.

Unique air flow control: the air current is balanced between two directions, for maximum comfort.

Flexible installation: the condensate drain pump raises drain piping up to 850 mm.

Enhanced Indoor Air Quality: standard long-life filters.

Fresh air intake: ensures constant air renewal.

Wide range of accessories, including a wireless infrared remote control kit.

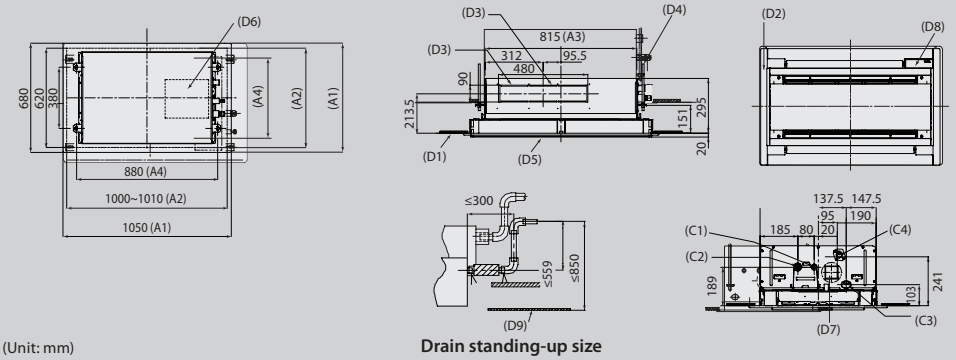
For ceilings height up to 3,8 m (4 to 6 HP)

Technical specifications **heat pump**

Indoor unit	MMU-	AP0072WH	AP0092WH	AP0122WH	AP0152WH	AP0182WH	AP0242WH	AP0272WH	AP0302WH	AP0362WH	AP0482WH	AP0562WH
Cooling capacity	kW	2,2	2,8	3,6	4,5	5,6	7,1	8,0	9,0	11,2	14,0	16,0
Heating capacity	kW	2,5	3,2	4,0	5,0	6,3	8,0	9,0	10,0	12,5	16,0	18,0
Power consumption	kW	0,029	0,029	0,029	0,030	0,044	0,054	0,054	0,064	0,073	0,088	0,117
Running current	A	0,23	0,23	0,23	0,24	0,32	0,39	0,39	0,46	0,48	0,57	0,75
Starting current	A	0,35	0,35	0,35	0,36	0,48	0,59	0,59	0,69	0,72	0,86	1,13

Indoor unit	MMU-	AP0072WH	AP0092WH	AP0122WH	AP0152WH	AP0182WH	AP0242WH	AP0272WH	AP0302WH	AP0362WH	AP0482WH	AP0562WH
Air Flow (h/m/l)	m^3/h	558/498/450			600/534/450	900/750/618	1050/840/738		1260/900/780	1740/1434/1182	1800/1482/1230	2040/1578/1320
Air Flow (h/m/l)	l/s	155/138/125			167/148/125	250/208/172	291/233/205		350/250/780	483/398/328	500/412/342	567/438/367
Sound pressure level (h/m/l)	dB(A)	34/32/30			35/33/30	35/33/30	38/35/33		40/37/34	42/39/36	43/40/37	46/42/39
Sound power level (h/m/l)	dB(A)	49/47/45			50/48/45	50/48/45	53/50/48		55/52/49	57/54/51	58/55/52	61/57/54
Dimensions (HxWxD)	mm	295 x 815 x 570				345 x 1180 x 570				345 x 1600 x 570		
Weight	kg	19				26				36		
Panel dimensions (HxWxD)	mm	20 x 1050 x 680				20 x 1415 x 680				20 x 1835 x 680		
Panel weight	kg	10				14				14		
Connecting pipe (gas - liquid)		3/8" - 1/4"	3/8" - 1/4"	3/8" - 1/4"	1/2" - 1/4"	1/2" - 1/4"	5/8" - 3/8"	5/8" - 3/8"	5/8" - 3/8"	5/8" - 3/8"	5/8" - 3/8"	5/8" - 3/8"
Air filter		standard filter attached (long life filter)										
Drain port diameter	mm	25										
Power supply	V-ph-Hz	220/240-1-50										

007 / 009 / 012 / 015



Drain standing-up size

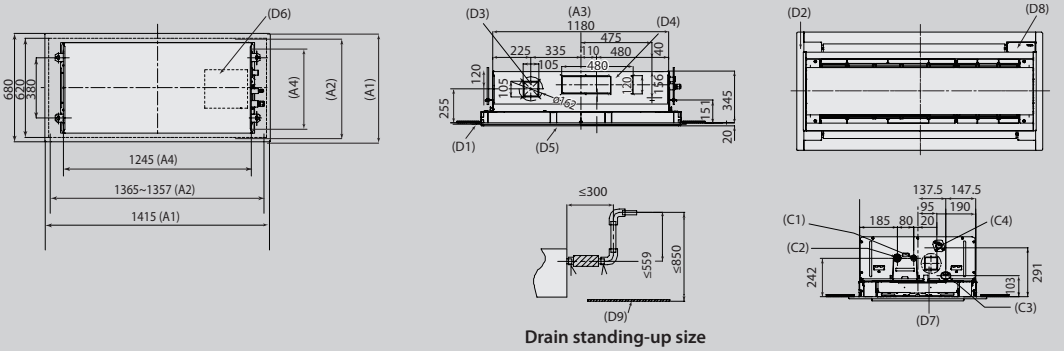
(Unit: mm)

(A1) Panel external dimension
(A2) Ceiling open dimension
(A3) Unit external dimension
(A4) Hanging bolt pitch

(C1) Refrigerant pipe connecting port (Gas side)
(C2) Refrigerant pipe connecting port (Liquid side)
(C3) Power supply connecting port
(C4) Drain pipe connecting port Inner ø32, Nominal ø25 for vinyl chloride pipe

(D1) Bottom face of ceiling
(D2) Adjust cover
(D3) Branch duct knockout hole
(D4) Hanging bolt 4-M10 procured locally
(D5) Ceiling panel (Sold separately)
(D6) Electric parts box
(D7) Knockout hole for air intake (Only at reverse side)
(D8) Wireless sensor mounting section
(D9) Ceiling

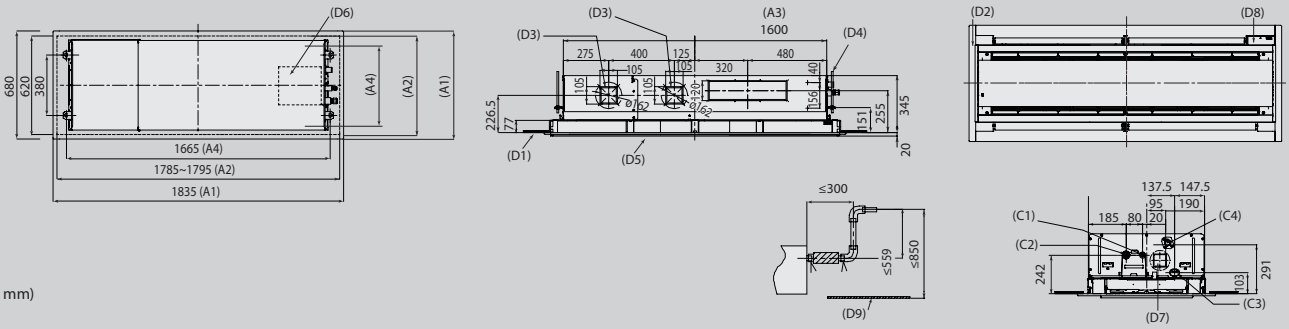
018 / 024 / 027 / 030



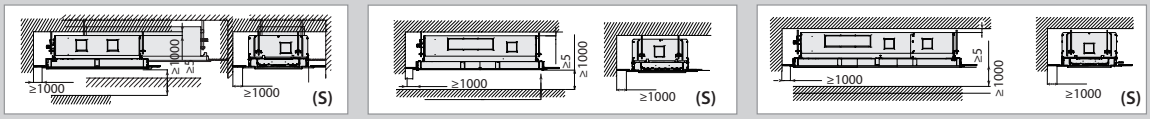
Drain standing-up size

(Unit: mm)

036 / 048 / 056

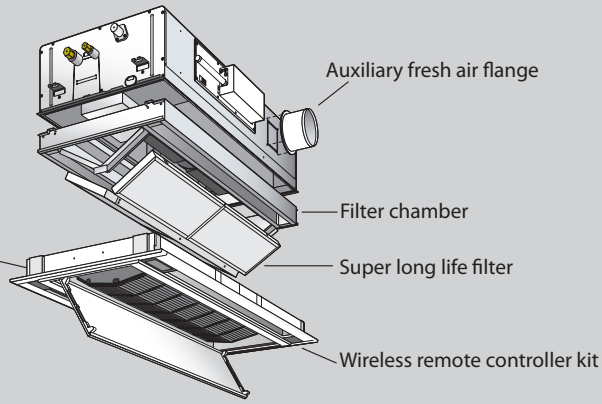


(Unit: mm)



(S) Space required for installation and servicing

Options



1-way cassette

Features

Toshiba's innovative slim-line 1-way cassette is simple to install and is suitable for small areas, such as hotels or offices guestrooms and reception rooms.

Key features

Compact hi-tech design: 235 × 850 × 400 mm (sizes 2,2 to 3,6).

Flexible installation: ideal for sites where above ceiling space is limited, the unit features a high-lift drain pipe (350 mm).

Low noise level: it operates down to 34 dB(A) (sizes 2,2 to 3,6).

MMU-AP*1YH**

MMU-AP*2SH**

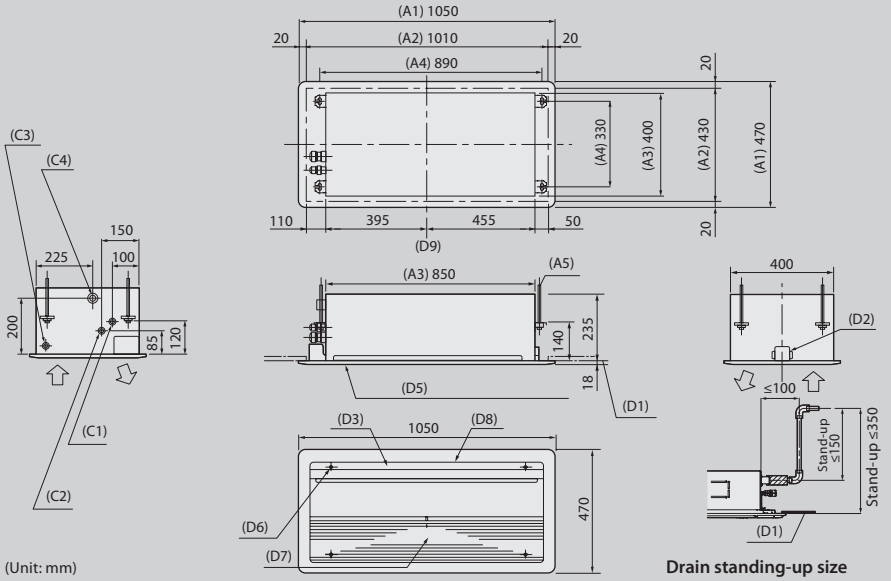
* The photo shows the MMU-AP¤¤¤2SH Series.

Technical specifications **heat pump**

Indoor unit	MMU-	AP0071YH	AP0091YH	AP0121YH	AP0152SH	AP0182SH	AP0242SH
Cooling capacity	kW	2,2	2,8	3,6	4,5	5,6	7,1
Heating capacity	kW	2,5	3,2	4,0	5,0	6,3	8,0
Power consumption	kW	0,053			0,042	0,046	0,075
Running current	A	0,24			0,34	0,37	0,62
Starting current	A	0,60			0,51	0,54	0,80

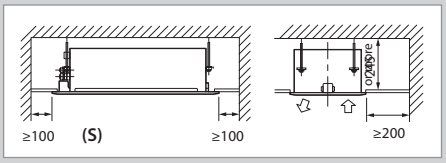
Indoor unit	MMU-	AP0071YH	AP0091YH	AP0121YH	AP0152SH	AP0182SH	AP0242SH
Air flow (h/l)	m^3/h	540/420			750/630	780/660	1140/810
Air flow (h/l)	l/s	150/116			208/175	216/183	316/224
Sound pressure level (h/m/l)	dB(A)	42/39/34			37/35/32	38/36/34	45/41/37
Sound power level (h/m/l)	dB(A)	57/54/49			57/54/51		58/56/52
Dimensions (h × w × d)	mm	235 × 850 × 400			200 × 1000 × 800		
Weight	kg	22			21		22
Panel dimensions (h × w × d)	mm	18 × 1050 × 470			20 × 1230 × 800		
Panel weight	kg	3,5			5,5		
Air filter		Standard filter attached (Long life filter)					
Connecting pipe (gas – liquid)		3/8" - 1/4"			1/2" - 1/4"		5/8" - 3/8"
Drain port diameter	mm	25					
Power supply	V-ph-Hz	220/240-1-50					

007 / 009 / 012



(Unit: mm)

Drain standing-up size



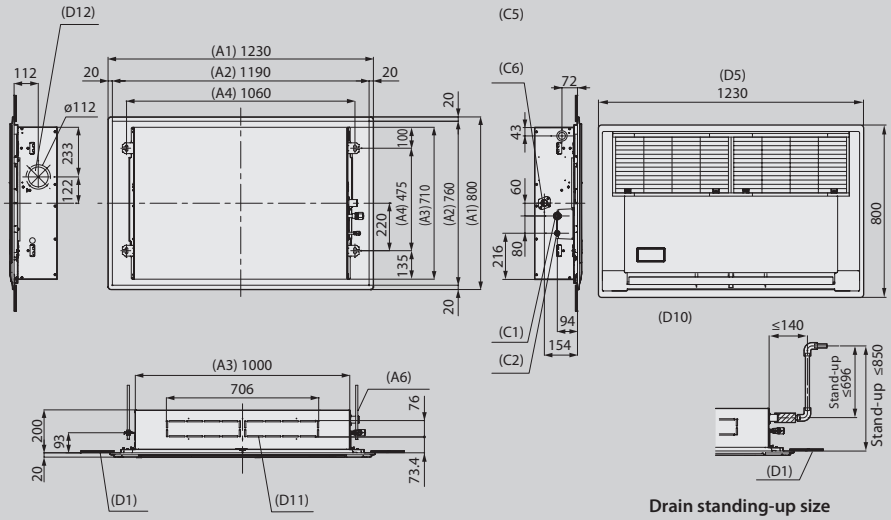
(A1) Panel external dimension
(A2) Ceiling open dimension
(A3) Unit external dimension
(A4) Hanging bolt pitch
(A5) Hanging bolt 4-M10 procured locally
(A6) Hanging bolt M10 or W3/8 local arrange

(C1) Refrigerant pipe connecting port (Gas side)
(C2) Refrigerant pipe connecting port (Liquid side)
(C3) Power supply connecting port
(C4) Drain pipe connecting port Inner ø32, Nominal ø25 for vinyl chloride pipe
(C5) Wiring connection port
(C6) Drain pipe connecting port

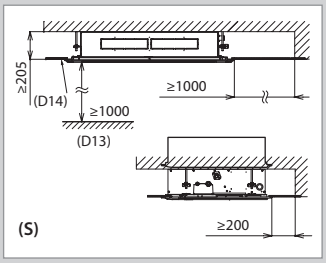
(D1) Bottom face of ceiling
(D2) Support metal
(D3) Discharge louver
(D5) Ceiling panel (Sold separately)
(D6) Panel mounting hole 5 positions
(D7) Air inlet
(D8) Air outlet
(D9) Center of panel
(D10) Wireless sensor mounting section
(D11) Knockout hole for front blow out
(D12) Fresh air intake (ø92 knockout hole)
(D13) Obstacle
(D14) Ceiling

(S) Space required for installation and servicing

015 / 018 / 024



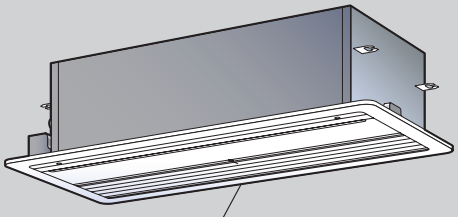
Drain standing-up size



(Unit: mm)

Options

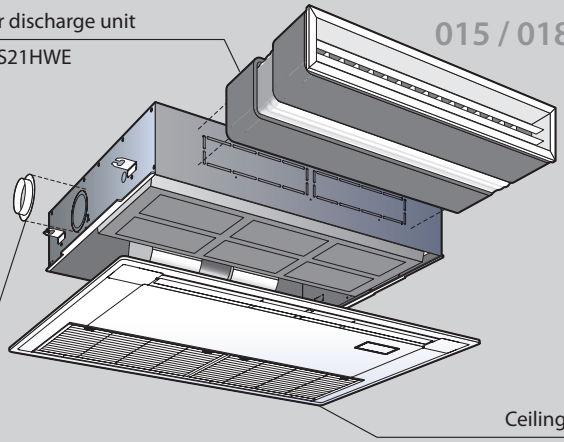
007 / 009 / 012



Ceiling panel
RBC-UY136PG

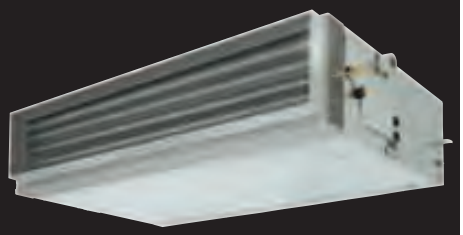
015 / 018 / 024

Front air discharge unit
TCB-BUS21HWE



Auxiliary fresh air flange
TCB-FF101URE2

Ceiling panel
RBC-US21PGE



MMD-AP***1BH

Standard ducted unit

Features

The discreet standard ducted unit can easily be installed in ceiling voids or false ceilings, and operates very quietly.

Whatever the shape of the room, this flexible model ensures a uniform temperature and air distribution, and enhances the Indoor Air Quality for optimum user comfort.

Key features

Design flexibility: external static pressure can be raised up to 110 Pa for extensive ducting.

Low noise level: at low fan speed, it operates down to 26 dB(A).

Flexible installation: ideal for sites with restriction on the space above ceiling level, the unit features a high-lift drain pipe (270 mm).

Uniform air distribution.

Enhanced Indoor Air Quality: wide range of filters possibilities.

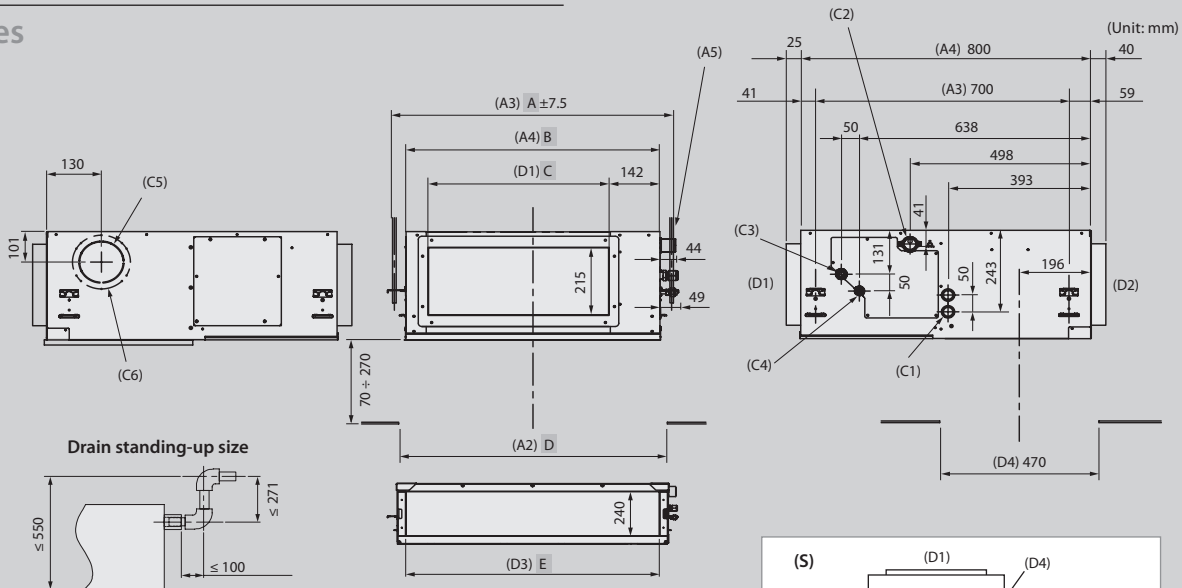
Fresh air intake: ensures a constant air renewal.

Technical specifications **heat pump**

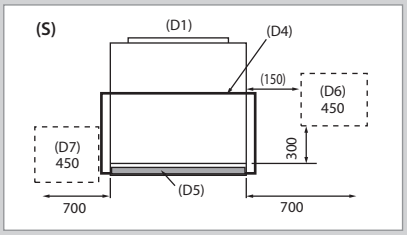
Indoor unit	MMD-	AP0071BH	AP0091BH	AP0121BH	AP0151BH	AP0181BH	AP0241BH	AP0271BH	AP0301SH	AP0361BH	AP0481BH	AP0561BH
Cooling capacity	kW	2,2	2,8	3,6	4,5	5,6	7,1	8,0	9,0	11,2	14,0	16,0
Heating capacity	kW	2,5	3,2	4,0	5,0	6,3	8,0	9,0	10,0	12,5	16,0	18,0
Power consumption	kW	0,033		0,039		0,050	0,060		0,071	0,107	0,128	
Running current	A	0,29		0,34		0,43	0,52		0,61	0,83	0,98	
Starting current	A	0,50		0,59		0,75	0,90		1,05	1,44	1,70	

Indoor unit	MMD-	AP0071BH	AP0091BH	AP0121BH	AP0151BH	AP0181BH	AP0241BH	AP0271BH	AP0301SH	AP0361BH	AP0481BH	AP0561BH
Air flow (h/l)	m^3/h	480/340		570/400	650/480	780/540	1140/870		1260/870	1620/1200	1980/1490	
Air flow (h/l)	l/s	133/94		158/111	180/133	216/150	316/241		349/241	449/332	548/413	
Sound pressure level (h/m/l)	dB(A)	30/28/26		31/29/27	31/29/27	32/30/28	33/31/29		34/32/29	36/34/32		
Sound power level (h/m/l)	dB(A)	52/49/46		53/50/47	54/51/47	55/52/48	55/52/49		56/53/50	57/54/51	59/56/53	
Dimensions (h × w × d)	mm	320 × 550 × 800			320 × 700 × 800		320 × 1000 × 800			320 × 1350 × 800		
Weight	kg	28			32		43			55		
Panel dimensions (h × w × d)	mm	9 × 652 × 500			9 × 802 × 500		9 × 1102 × 500			9 × 1452 × 500		
Panel weight	kg	3,5			4		6			7		
External static pressure	Pa	Factory setting 50 (max 110)										
Connecting pipe (gas – liquid)		3/8" – 1/4"			1/2" – 1/4"		5/8" – 3/8"			5/8" – 3/8"		
Drain port diameter	mm	25			25		25			25		
Power supply	V-ph-Hz	220/240-1-50			220/240-1-50		220/240-1-50			220/240-1-50		

All sizes



Drain standing-up size



Model MMD-	A	B	C	D	E
AP0071BH, AP0091BH, AP0121BH	616	550	350	600	470
AP0151BH, AP0181BH	766	700	500	750	620
AP0241BH, AP0271BH, AP0301BH	1066	1000	800	1050	920
AP0361BH, AP0481BH, AP0561BH	1416	1350	1150	1400	920

(A2) Ceiling open dimension
(A3) Hanging bolt pitch
(A4) Unit external dimension
(A5) Hanging bolt 4-M10 procured locally

(C1) Power supply connecting port**
(C2) Drain pipe* connecting port
(C3) Refrigerant pipe connecting port (Gas side)
(C4) Refrigerant pipe connecting port (Liquid side)
(C5) Knock-out hole for taking-in air
(C6) 10-Ø4 tapping screw Ø160

(D1) Air outlet
(D2) Air inlet
(D3) Air suction
(D4) Ceiling opening part
(D5) Air filter
(D6) Check port A
(D7) Check port B
* Inner Ø32 vinyl chloride pipe VP25 connection
** Ø26 , remote controller wire exit port

(S) Space required for installation and servicing
Be sure to place a check port A at the position indicated in the figure for maintenance of the equipment.

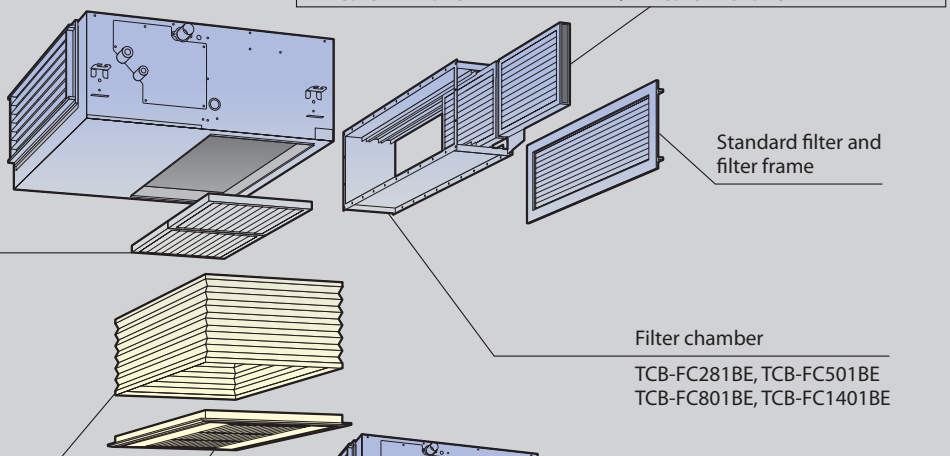
Options

High-efficiency filter 65
TCB-UFM11BFCE
TCB-UFM21BFCE

High-efficiency filter 90
TCB-UFH51BFCE
TCB-UFH61BFCE

High-efficiency filter 65
TCB-UFM11BE
TCB-UFM21BE
TCB-UFM31BE
TCB-UFM41BE

High-efficiency filter 90
TCB-UFH51BE
TCB-UFH61BE
TCB-UFH71BE
TCB-UFH81BE



Standard filter and filter frame

Filter chamber
TCB-FC281BE, TCB-FC501BE
TCB-FC801BE, TCB-FC1401BE

Suction canvas
TCB-CA281BE, TCB-CA501BE
TCB-CA801BE, TCB-CA1401BE

Ceiling panel
RBC-UD281PE(W)/RBC-UD501PE(W)
RBC-UD801PE(W)/RBC-UD1401PE(W)E

Back cover
Filter guide
Air filter

Filter kit for underside
TCB-FK281BE
TCB-FK501BE
TCB-FK801BE
TCB-FK1401BE

MMD-AP***1H

High static pressure ducted unit

Features

This is Toshiba's most powerful ducted unit delivering air flows up to 5040 m^3/h.

Unobtrusive, flexible and compact, it can be installed easily and discretely in any interior.

This model is the ideal solution for both new and refurbishing buildings.

Key features

Easy installation.

Inspection hole enables easy access and maintenance.

Wide range of options available: filter chamber, long-life filter, drain pump kit, etc.

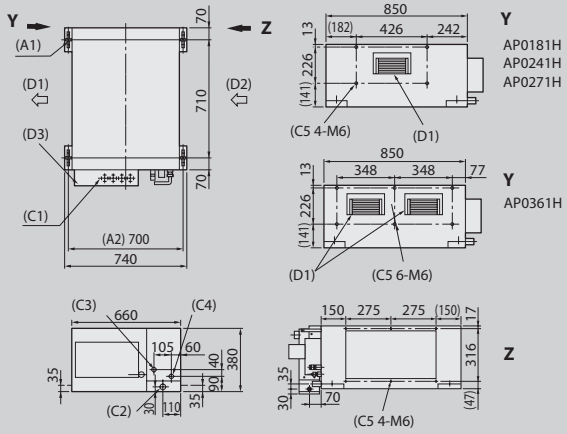
Static pressure can be set to 3 levels (68,6, 137 and 196 Pa).

Technical specifications **heat pump**

Indoor unit	MMD-	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H	AP0721H	AP0961H
Cooling capacity	kW	5,6	7,1	8,0	11,2	14,0	22,4	28,0
Heating capacity	kW	6,3	8,0	9,0	12,5	16,0	25,0	31,5
Power consumption	kW	0,184	0,299		0,368	0,414	1,200	1,260
Running current	A	0,81	1,35		1,63	1,84	5,25	5,52
Starting current	A	1,3	3,5		4,1	4,8	13,6	14,8

Indoor unit	MMD-	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H	AP0721H	AP0961H
Air flow (h)	m^3/h	900	1320		1600	2100	3600	4200
Air flow (h)	l/s	249	366		443	582	997	1163
Sound pressure level (h)	dB(A)	37	40				49	50
Sound power level (h)	dB(A)	57	60				69	70
Dimensions (h × w × d)	mm	380 × 850 × 660				380 × 1200 × 660	470 × 1380 × 1250	
Weight	kg	50	52		56	67	150	
Air filter		Option or field supply						
External static pressure	Pa	68,6 (Min) / 137,0 (factory setting) / 196,0 (Max)						
Connecting pipe (gas – liquid)		1/2" - 1/4"	5/8" - 3/8"			5/8" - 3/8"	7/8" - 1/2"	
Drain port diameter	mm	25	25			25	25	
Power supply	V-ph-Hz	220/240-1-50	220/240-1-50			220/240-1-50	220/240-1-50	

018 / 024 / 027 / 036



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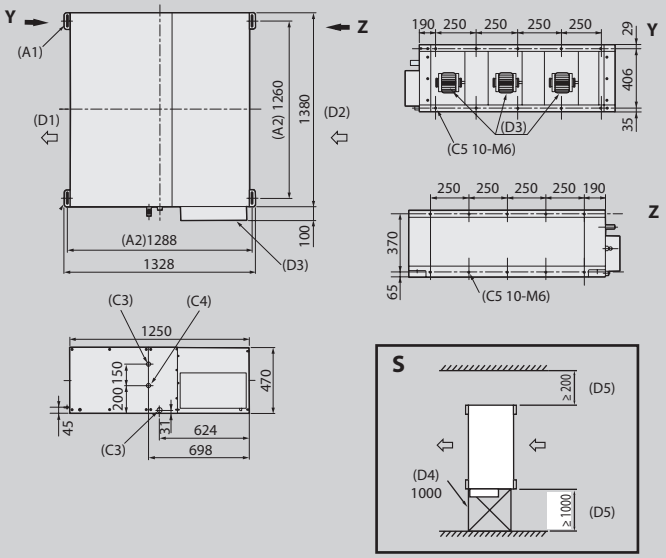

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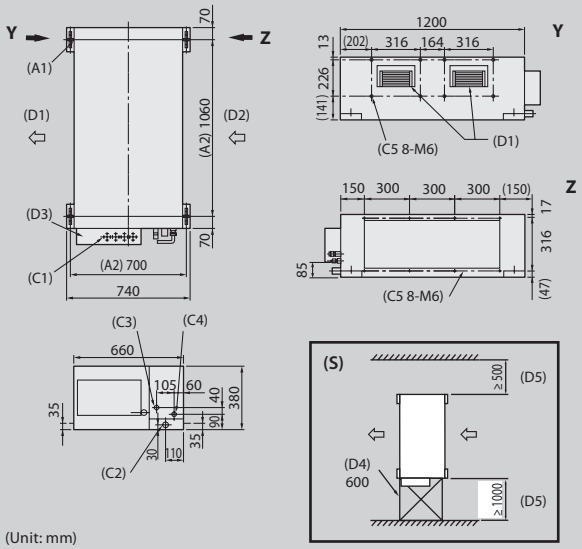


(Unit: mm)

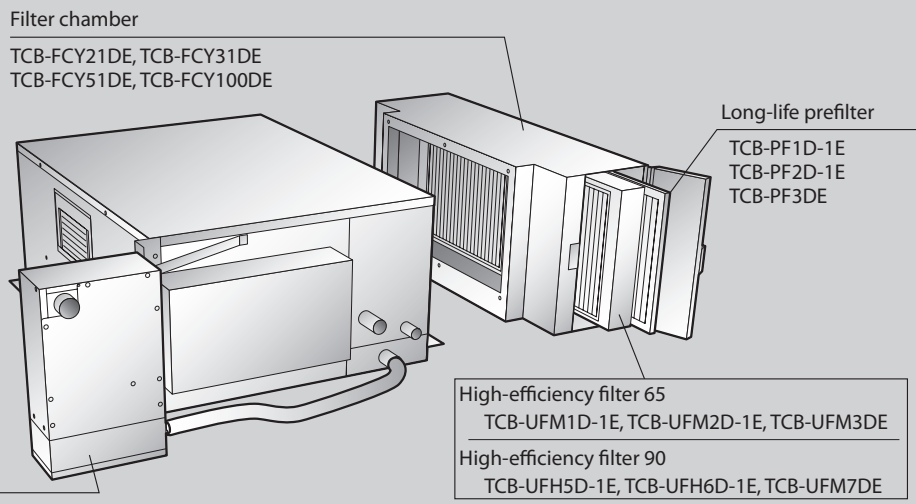
(A1) Hole for hanging bolt 4-Ø12x72
(A2) Hanging bolt pitch

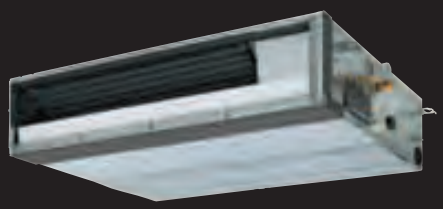
(C1) Power supply connecting port**
(C2) Drain pipe* connecting port
(C3) Refrigerant pipe connecting port (Gas side)
(C4) Refrigerant pipe connecting port (Liquid side)
(C5) Screw hole for duct mounting

(D1) Air outlet
(D2) Air inlet
(D3) Electric parts box
(D4) Check port
(D5) Service space
(S) Space required for installation and servicing

* Inner Ø32 vinyl chloride pipe VP25 connection
** Ø26 , remote controller wire exit port
*** sizes

Options





MMD-AP***1SPH

Slim duct

Features

Whether installed in a ceiling void or in a false ceiling, Toshiba new slim-duct offers the ultimate technology, with exceptional energy savings, high performance and easy installation.

This ultra flexible, invisible and silent unit creates a pleasant and comfortable environment for a wide range of applications, such as hotels, offices, shops, etc.

Key features

Very slim design: only 21 cm height, for easier and more flexible installation.

Very low noise level: it can operate down to 24 dB(A).

Flexible installation: ideal for sites with restriction on the space above ceiling level, the unit features a high-lift drain pipe (850 mm).

Perfect comfort throughout the room: can be used with any kind of air diffuser.

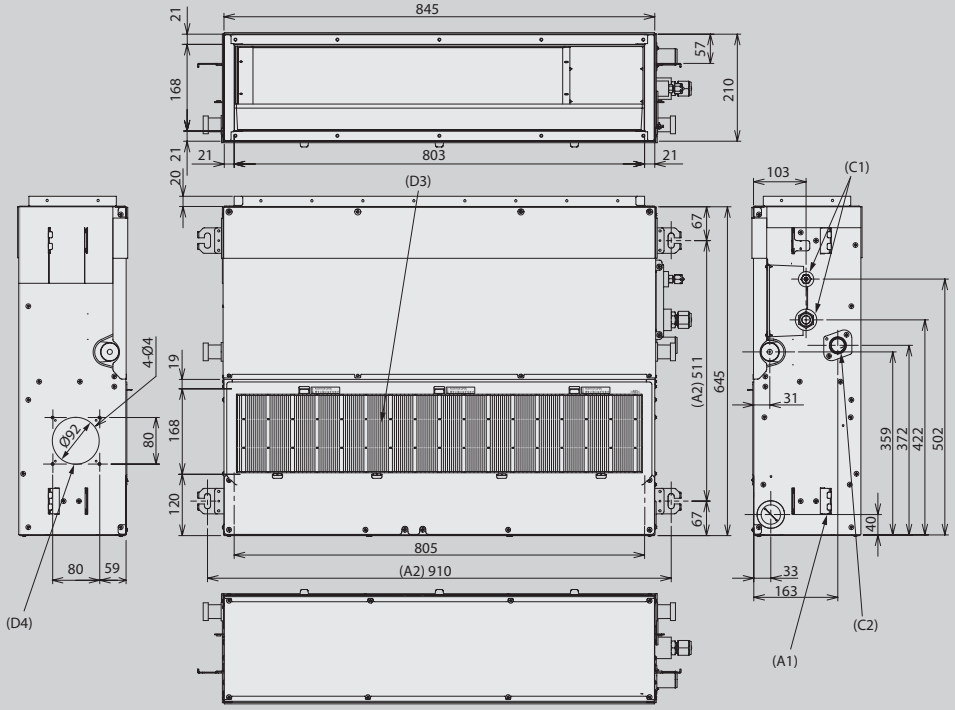
Unobtrusive: concealed installation within a ceiling void.

Technical specifications **heat pump**

Indoor unit	MMD-	AP0071SPH	AP0091SPH	AP0121SPH	AP0151SPH	AP0181SPH
Cooling capacity	kW	2,2	2,8	3,6	4,5	5,6
Heating capacity	kW	2,5	3,2	4,0	5,0	6,3
Power consumption	kW	0,039	0,039	0,043	0,045	0,054
Running current	A	0,29	0,29	0,31	0,32	0,39
Starting current	A	0,51	0,51	0,54	0,56	0,68

Indoor unit	MMD-	AP0071SPH	AP0091SPH	AP0121SPH	AP0151SPH	AP0181SPH
Air flow (h/l)	m^3/h	540/400		600/450	690/520	780/580
Air flow (h/l)	l/s	150/111		166/125	191/144	216/161
Sound pressure level, rear suction (h/l)	dB(A)	28/24		29/25	32/28	33/29
Sound pressure level, bottom suction (h/m/l)	dB(A)	36/33/30		38/35/32	39/36/33	40/38/36
Sound power level (h/m/l)	dB(A)	51/48/45		53/50/47	54/51/48	55/53/51
Dimensions (h × w × d)	mm	210 × 845 × 645			210 × 845 × 645	
Weight	kg	22			23	
External static pressure	Pa	6 (Factory setting)-16-31-46, 4steps		5 (Factory setting)-15-30-45, 4steps		4 (Factory setting)-14-29-44, 4 steps
Connecting pipe (gas – liquid)		3/8" - 1/4"			1/2" - 1/4"	
Drain port diameter	mm	25				
Power supply	V-ph-Hz	220/240-1-50				

All sizes

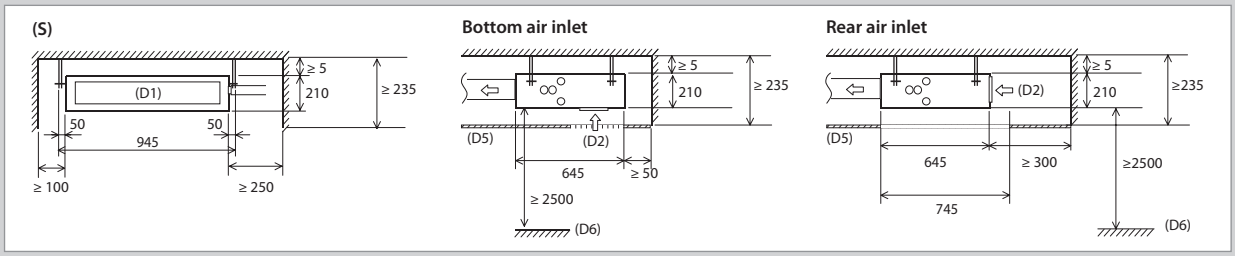


(A1) Hole for hanging bolt 4-Ø12x72
(A2) Hanging bolt pitch

(C2) Drain pipe connecting port
(C3) Refrigerant pipe connecting port (Gas side)
(C4) Refrigerant pipe connecting port (Liquid side)

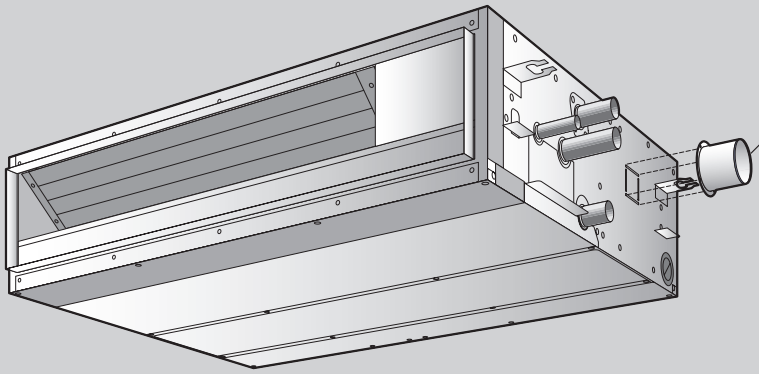
(D1) Air outlet
(D2) Air inlet
(D3) Air filter
(D4) Fresh air inlet (knock-out hole)
(D5) Ceiling
(D6) Floor surface

(S) Space required for installation and servicing

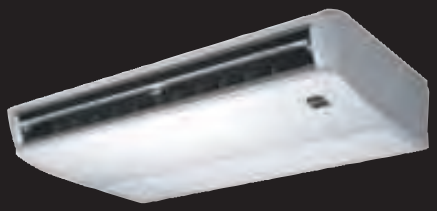


(Unit: mm)

Options



Auxiliary fresh air flange
TCB-FF101URE2



MMC-AP***1H

Ceiling suspended unit

Features

The installation of this ceiling suspended unit is very easy.

It creates a very pleasant and relaxing environment, diffusing rapidly and uniformly the required temperature, in cooling and heating modes.

This model is the best solution for ceilings that do not have voids.

It can be used for a wide range of applications, but is particularly recommended for refurbishment projects.

Key features

Easy and fast installation: simplified unit suspension.

Space-saving unit: Ideal for sites where ceiling void is limited. The unit features a high-lift drain pipe (600 mm).

Optimum louver control: air flow angle is automatically set to the most suitable setting according to your cooling or heating needs, and an automatic swing mode enables air flow to reach all areas in the room.

Refrigerant piping: 3 possibilities (top, rear or right side of the unit).

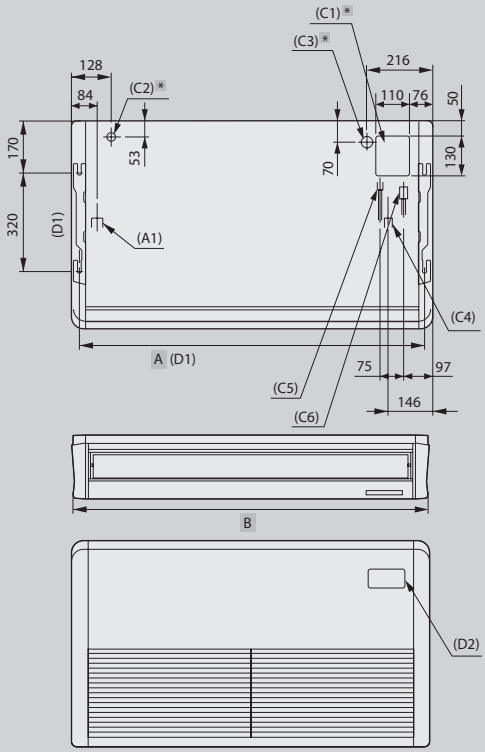
Drain piping: 2 possibilities.

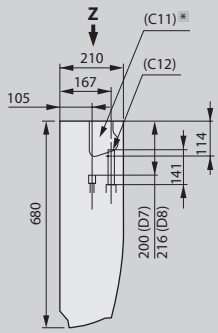
Technical specifications **heat pump**

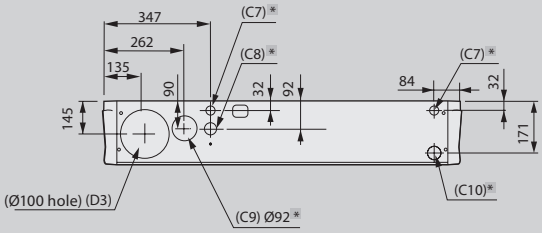
Indoor unit		MMC-	AP0151H	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H
Cooling capacity	kW	CO	4,5	5,6	7,1	8,0	11,2	14,0
Heating capacity	kW	HP	5,0	6,3	8,0	9,0	12,5	16,0
Power consumption	kW		0,033	0,038	0,050		0,091	0,110
Running current	A		0,29	0,32	0,42		0,78	0,84
Starting current	A		0,43	0,48	0,62		1,17	1,25

Indoor unit	MMC-	AP0151H	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H
Air flow (h/l)	m^3/h	720/540	780/540	1110/840		1650/1200	1800/1320
Air flow (h/l)	l/s	199/150	216/150	307/233		457/332	499/366
Sound pressure level (h/m/l)	dB(A)	35/32/30	36/33/30	38/36/33		41/38/35	43/40/37
Sound power level (h/m/l)	dB(A)	50/47/45	51/48/45	53/51/48		56/53/50	58/55/52
Dimensions (h × w × d)	mm	210 × 910 × 680		210 × 1180 × 680		210 × 1595 × 680	
Weight	kg	22		26		34	
Air filter		Standard filter attached (long life filter)					
Connecting pipe (gas – liquid)		1/2" - 1/4"		5/8" - 3/8"		5/8" - 3/8"	
Drain port diameter	mm	20		20		20	
Power supply	V-ph-Hz	220/240-1-50		220/240-1-50		220/240-1-50	

All sizes







Z view

(A1) Left drain size

(C1) Upper piping exhaust port
(C2) Remote controller piping intake port
(C3) Power supply cable intake port
(C4) Drain pipe connecting port
(C5) Refrigerant pipe (Gas side)
(C6) Refrigerant pipe (Liquid side)
(C7) Remote controller cable intake port
(C8) Power supply intake port
(C9) Air intake port (Duct sold separately)

(C10) Drain left piping exhaust port
(C11) Piping exhaust port
(C12) Drain port VP20 (Inner ø26, hose supplied)

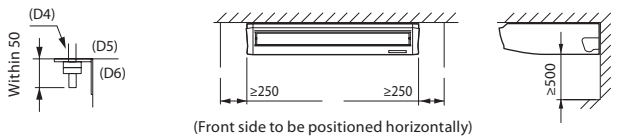
(D1) (Hanging position)
(D2) Wireless sensor mounting section
(D3) Piping hole on the wall
(D4) Hanging bolt
(D5) Ceiling surface
(D6) Unit
(D7) Liquid pipe
(D8) Gas pipe

(S) Space required for installation and servicing

(*) Knockout hole

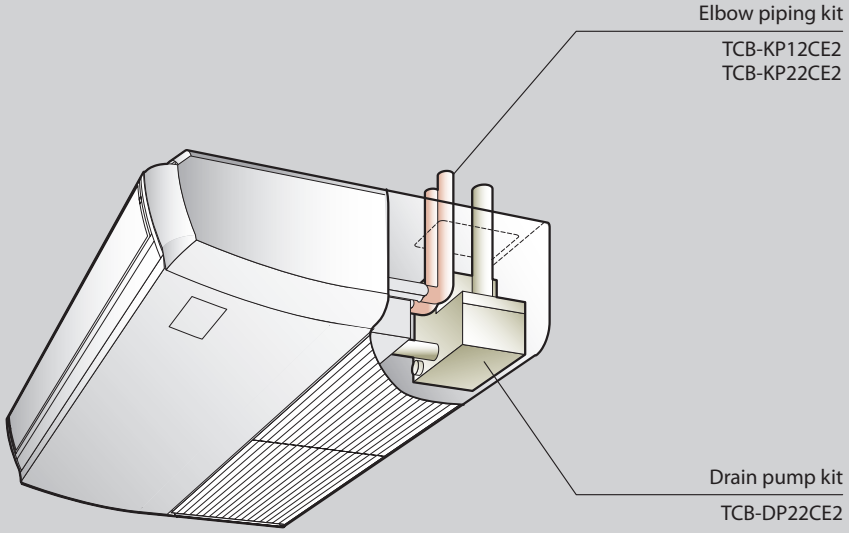
(Unit: mm)

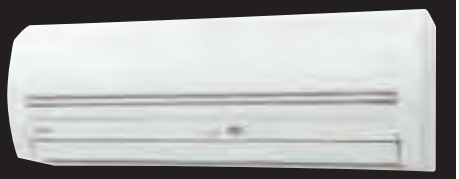
Model MMC-	A	B
AP0151H, AP0181H	855	910
AP0241H, AP0271H	1125	1180
AP0361H, AP0481H	1540	1595



(Front side to be positioned horizontally)

Options





MMK-AP***2H

Compact high-wall

Features

This compact high-wall is perfect for limited spaces, such as offices, small shops or hotel rooms.

The unit is compact (only 275 × 790 × 208 mm) and light-weight (11 kg).

This high-wall also achieves outstanding sound level performances.

Key features

New compact and modern design: and fits easily in a narrow corridor (width of a door). New rounded shape and grille, for a more attractive design.

Light unit: 11 kg – reduced by 40% less than average equivalent units compared to the previous model.

Clean unit: the panel is easily detachable for fast grille and filters cleaning.

Low noise level: it operates down to 29 dB(A).

Auto-swing mechanism.

All sizes

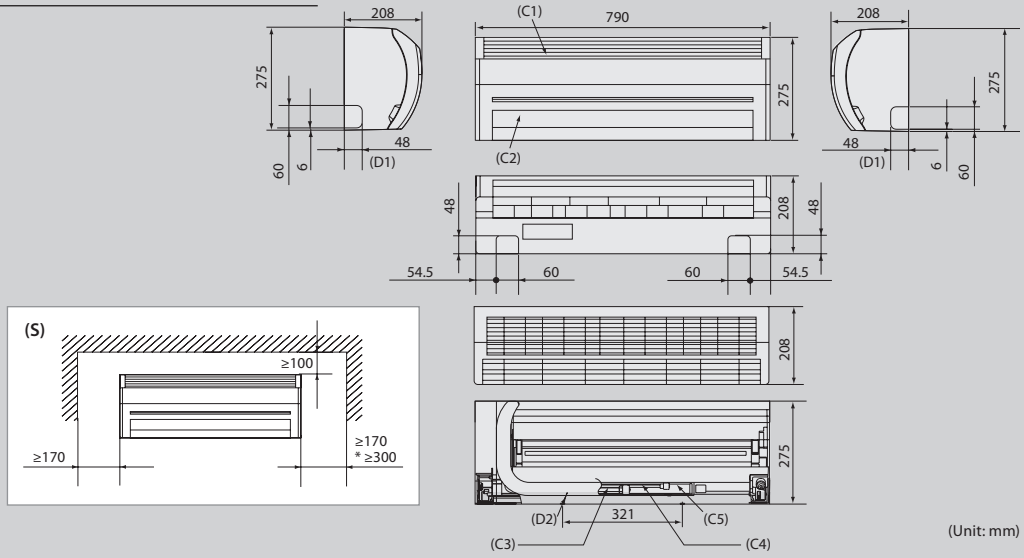
(A1) Air inlet
(A2) Air outlet

(C1) Refrigerant pipe connecting port (Gas side)
(C2) Refrigerant pipe connecting port (Liquid side)
(C3) Drain pipe

(D1) Knock-out hole
(D2) Tab for insulation plate

(S) Space required for installation and servicing

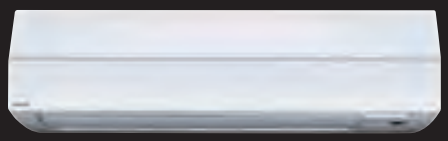
(*) (For attached Flow Selector unit when used in heat recovery model)



Technical specifications **heat pump**

Indoor unit	MMK-	AP0072H	AP0092H	AP0122H
Cooling capacity	kW	2,2	2,8	3,6
Heating capacity	kW	2,5	3,2	4,0
Power consumption	kW	0,017	0,018	0,019
Running current	A	0,17	0,18	0,19
Starting current	A	0,22	0,23	0,24

Indoor unit	MMK-	AP0072H	AP0092H	AP0122H
Air flow (h/l)	m^3/h	480/360	510/360	540/360
Air flow (h/l)	l/s	133/100	141/100	150/100
Sound pressure level (h/m/l)	dB(A)	35/32/29	36/33/29	37/33/29
Sound power level (h/m/l)	dB(A)	50/47/44	51/48/44	52/48/44
Dimensions (h × w × d)	mm	275 × 790 × 208	275 × 790 × 208	275 × 790 × 208
Weight	kg	11	11	11
Connecting pipe (gas – liquid)		3/8" - 1/4"	3/8" - 1/4"	3/8" - 1/4"
Drain port diameter	mm	16	16	16
Power supply	V-ph-Hz	220/240-1-50	220/240-1-50	220/240-1-50



MMK-AP***3H

High-wall

Features

This classic high-wall is elegant and slim; it can easily blend in with any room interior.

Total comfort is granted, thanks also to the 70° directional auto-swing louver that provide uniform air distribution.

Key features

Aesthetic and compact design: elegant, with its soft white colour and round design. Slim: only 210 mm, for an easy and discreet installation.

Easy installation, with its auxiliary piping.

Refrigerant piping: 3 possibilities (top, rear or right side of the unit).

Top for comfort: 70° directional auto-swing louver for optimum air distribution.

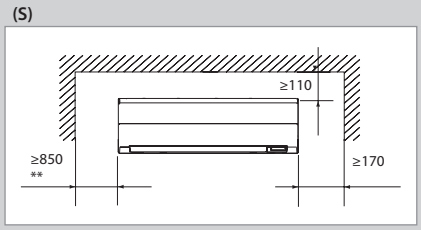
All sizes

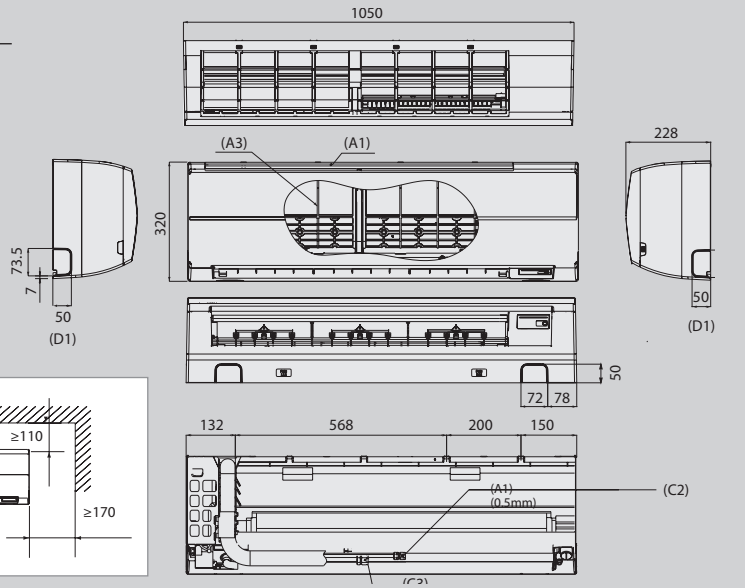
(A1) Air inlet
(A3) Air filter

(C1) Refrigerant pipe connecting port (Gas side)
(C2) Refrigerant pipe connecting port (Liquid side)
(C3) Drain pipe

(D1) Knock-out hole

(S) Space required for installation and servicing
** For exchange of cross flow fan





(Unit: mm)

Technical specifications **heat pump**

Indoor unit	MMK-	AP0073H	AP0093H	AP0123H	AP0153H	AP0183H	AP0243H
Cooling capacity	kW	2,2	2,8	3,6	4,5	5,6	7,1
Heating capacity	kW	2,5	3,2	4,0	5,0	6,3	8,0
Power consumption	kW	0,018	0,021		0,043		0,050
Running current	A	0,17	0,19		0,32		0,37
Starting current	A	0,22	0,24		0,41		0,47

Indoor unit	MMK-	AP0073H	AP0093H	AP0123H	AP0153H	AP0183H	AP0243H
Air flow (h/l)	m^3/h	570/390	600/390		840/540		1020/570
Air flow (h/l)	l/s	158/108	166/108		233/150		283/158
Sound pressure level (h/m/l)	dB(A)	35/31/28	37/32/28		41/36/33		46/39/34
Sound power level (h/m/l)	dB(A)	50/46/43	52/47/43		56/51/48		61/54/49
Dimensions (h × w × d)	mm	320 × 1050 × 228					
Weight	kg	15					
Air filter		Standard filter attached (Long life filter)					
Connecting pipe (gas – liquid)		3/8" - 1/4"			1/2" - 1/4"		5/8" - 3/8"
Drain port diameter	mm	16					
Power supply	V-ph-Hz	220/240-1-50	220/240-1-50		220/240-1-50		220/240-1-50

MML-AP***1BH

Concealed chassis unit

Features

This chassis is compact and slim, it's very easy to install and to conceal behind a decorative panel to blend with any room interior.

Ideal for office and other commercial buildings with large fluctuation in load, the unit fits perfectly specialist applications such as libraries and hospitals.

Key features

Very compact design.

Height: only 600 mm, ideal for perimeters walls.

Depth: 200 mm, the unit can be installed along the wall ensuring space saving.

Low noise level: it operates down to 32 dB(A).

Easy maintenance: removable split front panel.

Easy access to the drain pan on the right side of the unit.

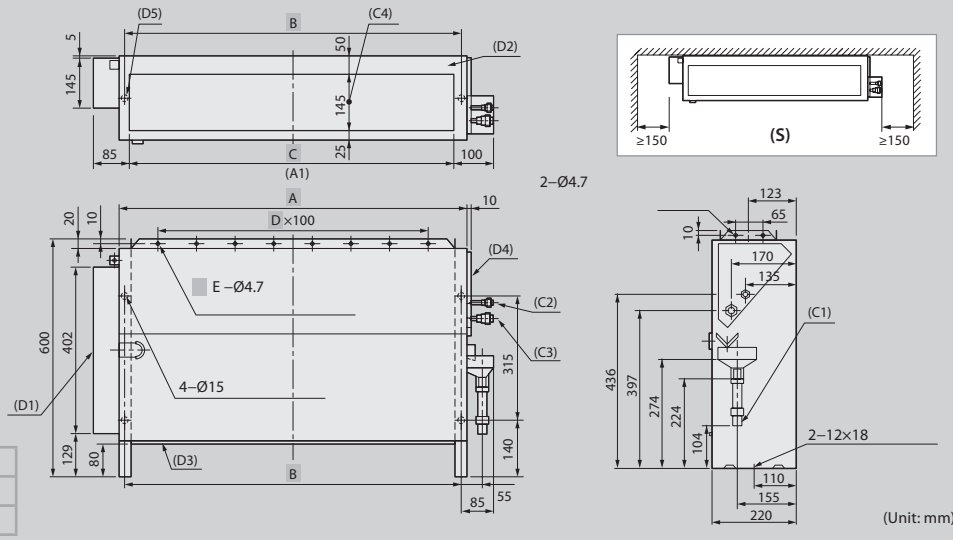
All sizes

(A1) Air discharge port size in flange

(C1) Drain pipe connecting port
(C2) Pipe connecting port (Liquid side)
(C3) Pipe connecting port (Gas side)
(C4) Air discharge port size in flange

(D1) Electric parts box
(D2) Ceiling board section
(D3) Air filter
(D4) Expansion valve box
(D5) Hole for floor mounting

(S) Space required for installation and servicing



Model MML-	A	B	C	D	E
AP0071BH to AP0121BH	610	580	550	4	5
AP0151BH to AP0241BH	910	880	850	7	8

Technical specifications **heat pump**

Indoor unit	MML-	AP0071BH	AP0091BH	AP0121BH	AP0151BH	AP0181BH	AP0241BH
Cooling capacity	kW	2,2	2,8	3,6	4,5	5,6	7,1
Heating capacity	kW	2,5	3,2	4,0	5,0	6,3	8,0
Power consumption	kW	0,056			0,090		0,095
Running current	A	0,25			0,45		0,46
Starting current	A	0,6			0,8		1,0

Indoor unit	MML-	AP0071BH	AP0091BH	AP0121BH	AP0151BH	AP0181BH	AP0241BH
Air flow (h/l)	m^3/h	460/300			740/490		950/640
Air flow (h/l)	l/s	127/83			205/136		263/177
Sound pressure level (h/m/l)	dB(A)	36/34/32					42/37/33
Sound power level (h/m/l)	dB(A)	54/52/50					60/55/51
Dimensions (h × w × d)	mm	600 × 745 × 220			600 × 1045 × 220		
Weight	kg	21			29		
Connecting pipe (gas – liquid)		3/8" - 1/4"			1/2" - 1/4"		5/8" - 3/8"
Drain port diameter	mm	20					
Power supply	V-ph-Hz	220/240-1-50		220/240-1-50		220/240-1-50	

MML-AP***1H

Floor mounted console

Features

This console unit represents the best choice for refurbishment projects of small spaces where there's no or limited ceiling void.

It's also an ideal indoor unit when comfortable heating is a must.

Its compact dimensions make the installation very easy and flexible.

Key features

Refrigerant piping: 4 possibilities (top, rear, left or right side of the unit).

Drain piping: 4 possibilities (top, rear, left or right side of the unit).

Top for comfort: air distribution can be easily reversed to meet the occupant's preference.

Wide choice of installation settings.

Compact unit: 630 × 950 × 230 mm, for more flexible installations and space savings.

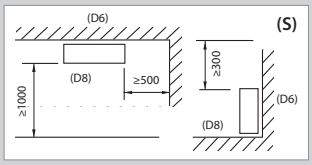
All sizes

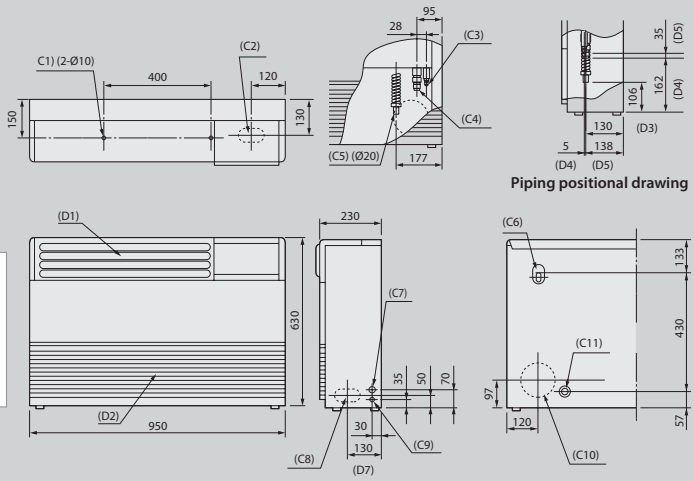
(C1) Hole for floor mounting
(C2) Lower refrigerant piping port (knockout hole 50x100)
(C3) Refrigerant pipe connecting port (Liquid side)
(C4) Refrigerant pipe connecting port (Gas side)
(C5) Drain pipe connecting port
(C6) Hole for wall mounting (knockout hole)
(C7) Power supply cord hole (Ø26 knockout hole)
(C8) Refrigerant pipe port (both sides) (knockout hole 50x100)
(C9) Earth screw (M6)
(C10) Refrigerant pipe port (Knockout hole Ø130)
(C11) Long hole for wall mounting

(D1) Air outlet
(D2) Air inlet
(D3) Drain
(D4) Liquid
(D5) Gas

(D6) Wall
(D7) 100 left side
(D8) Front side

(S) Space required for installation and servicing





Piping positional drawing

(Unit: mm)

Technical specifications **heat pump**

Indoor unit	MML-	AP0071H	AP0091H	AP0121H	AP0151H	AP0181H	AP0241H
Cooling capacity	kW	2,2	2,8	3,6	4,5	5,6	7,1
Heating capacity	kW	2,5	3,2	4,0	5,0	6,3	8,0
Power consumption	kW	0,056		0,092		0,102	
Running current	A	0,26		0,43		0,47	
Starting current	A	0,6		0,8		1,1	

Indoor unit	MML-	AP0071H	AP0091H	AP0121H	AP0151H	AP0181H	AP0241H
Air flow (h/l)	m^3/h	480/360		900/650		1080/780	
Air flow (h/l)	l/s	133/100		250/180		299/216	
Sound pressure level (h/m/l)	dB(A)	39/37/35		45/41/38		49/44/39	
Sound power level(h/m/l)	dB(A)	54/52/50		60/56/53		64/59/54	
Dimensions (h × w × d)	mm	630 × 950 × 230					
Weight	kg	37				40	
Connecting pipe (gas – liquid)		3/8" - 1/4"			1/2" - 1/4"		5/8" - 3/8"
Drain port diameter	mm	20					
Power supply	V-ph-Hz	220/240-1-50			220/240-1-50		

MMF-AP***1H

Floor standing

Features

This system is particularly suitable to air condition large rooms with low ceilings such as restaurants or lofts.

The units offer high air flow rates and superior air throw values.

Their wide air distribution angle permits air conditioning of larger rooms.

Key features

Reduced footprint: two sizes, 0,128 m^2 up to 8 kW and 0,243 m^2 up to 16 kW.

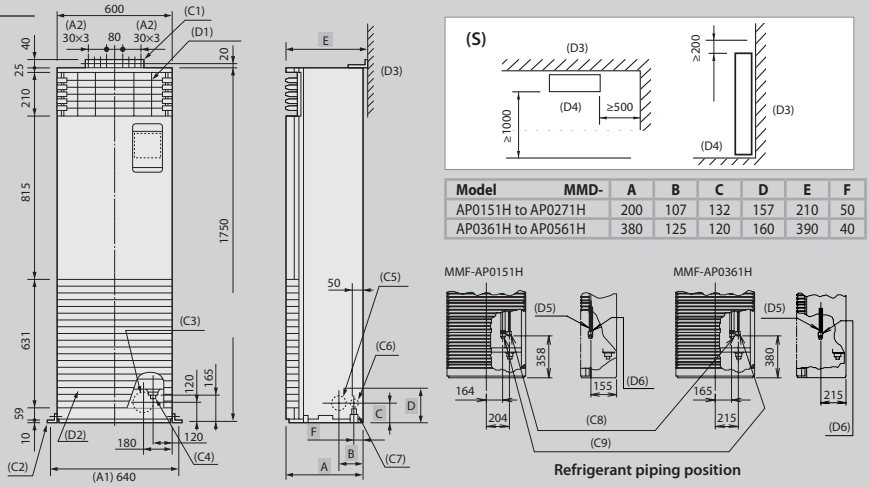
High air flows: from 180 l/s to 600 l/s (660 m^3/h to 2160 m^3/h).

Wide air distribution angle: up to 150°.

Large capacity range: cooling capacities from 4,5 kW to 16 kW and heating capacities from 5 kW to 18 kW.

All sizes

(A1) Floor fixing bracket screw positions
(A2) Pitch
(C1) Bracket for wall mounting
(C2) Bracket for floor mounting (both sides)
(C3) Rear side pipe hole (Ø130 knockout hole)
(C4) Drain hose base
(C5) Pipe holes on side (both sides) (knockout hole)
(C6) Drain hose outlet port (both sides) (knockout hole)
(C7) Earth screw (M4)
(C8) Refrigerant piping joint (Liquid side)
(C9) Refrigerant piping joint (Gas side)
(D1) Air outlet
(D2) Air inlet
(D3) Wall
(D4) (Front side)
(D5) Liquid side
(D6) Gas side
(S) Space required for installation and servicing



Model MMD-	A	B	C	D	E	F
AP0151H to AP0271H	200	107	132	157	210	50
AP0361H to AP0561H	380	125	120	160	390	40

Refrigerant piping position

Technical specifications **heat pump**

Indoor unit	MMF-	AP0151H	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H	AP0561H
Cooling capacity	kW	4,5	5,6	7,1	8,0	11,2	14,0	16,0
Heating capacity	kW	5	6,3	8,0	9,0	12,5	16,0	18,0
Power consumption	kW	0,15		0,19		0,28	0,35	
Running current	A	0,67		0,88		1,29	1,6	
Starting current	A	0,9		1,1		1,7	2,1	

Indoor unit	MMF-	AP0151H	AP0181H	AP0241H	AP0271H	AP0361H	AP0481H	AP0561H
Air flow (h/l)	m^3/h	900/660		1200/840		1920/1380	2160/1560	
Air flow (h/l)	l/s	249/183		332/233		532/382	598/432	
Sound pressure level (h/m/l)	dB(A)	46/43/38		49/45/40		51/48/44	54/50/46	
Sound power level (h/m/l)	dB(A)	64/61/56		67/63/58		69/66/62	72/68/64	
Dimensions (h × w × d)	mm	1750 × 600 × 210		1750 × 600 × 210		1750 × 600 × 390		
Weight	kg	48		49		65		
Air filter		Standard filter attached (long life filter)						
Connecting pipe (gas – liquid)		1/2" - 1/4"	5/8" - 3/8"			5/8" - 3/8"		
Drain port diameter	mm	20	20			20		
Power supply	V-ph-Hz	220/240-1-50	220/240-1-50			220/240-1-50		

VN-***TE

Air-to-Air Heat Exchangers

Features

The air-to-air heat exchangers can be integrated with the air conditioning system.

They use exhaust air to pre-condition the incoming air, thus reducing the cooling or heating load and the overall size of the required air conditioning system.

A range of electric heaters is available, together with controls that enable integration with both Light Commercial and VRF indoor units.

Key features

5 models available with air flow ranges from 70 to 280 l/s (250 ÷ 1000 m^3/h).

Fresh air ventilation: increasingly required in rooms with no window access.

Temperature and humidity: changed by the entering fresh air.

Improved energy efficiency, particularly during extremes of heat and cold.

Recovers up to 75% heat from exhaust air.

Technical specifications **heat pump**

Model		VN-250TE	VN-350TE	VN-500TE	VN-800TE	VN-1KTAE
Air flow (h/l)	m^3/h – l/s	250/170 – 69/47	350/280 – 97/78	500/370 – 139/102	800/650 – 222/180	1000/810 – 277/224
Temperature exchange efficiency (h/l)	%	75/77	75/77	75/77	75/77	75/76
Heat reclaim mode (h/l)	dB(A)	28/21	32/26	34/25	39/32	38,5/31
Bypass mode (h/l)	dB(A)	28/22,5	32/26	35/26,5	39,5/33	39/31,5
Operating range	°C	–10 ÷ 40	–10 ÷ 40	–10 ÷ 40	–10 ÷ 40	–10 ÷ 40
Power Input (h/l)						
Heat reclaim mode	W	119/79	154/117	214/151	347/302	445/332
Bypass mode	W	119/79	151/113	210/145	337/297	438/329
Enthalpy exchange efficiency (h/l)						
Heating	%	70/73	69/71	67/71	71/74	71/73
Cooling	%	66/63	69/66	67/62	68/65	68/65
Max. external static pressure (h/l)	Pa	90/37	95/42	105/38	140/70	90/35
Dimensions (h × w × d)	mm	270 × 599 × 882	270 × 804 × 882	270 × 904 × 962	388 × 884 × 1322	388 × 1134 × 1322
Weight	kg	29	37	43	71	83
Duct diameter	mm	150	150	200	250	250
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

MMD-AP*HFE**

Connectable outdoor unit
MMY-MAPXXXXT8
MMY-MAPXXXXHT8
* Cooling/Heating selecting SMMS type outdoor unit.

Fresh air intake

Features

This unit offers the possibility to introduce in the building external fresh air and to control air discharge temperature.

It's the ideal solution for school, hospital, offices and all the buildings that require a fresh air ventilation, in limited quantity, without any further exclusive system.

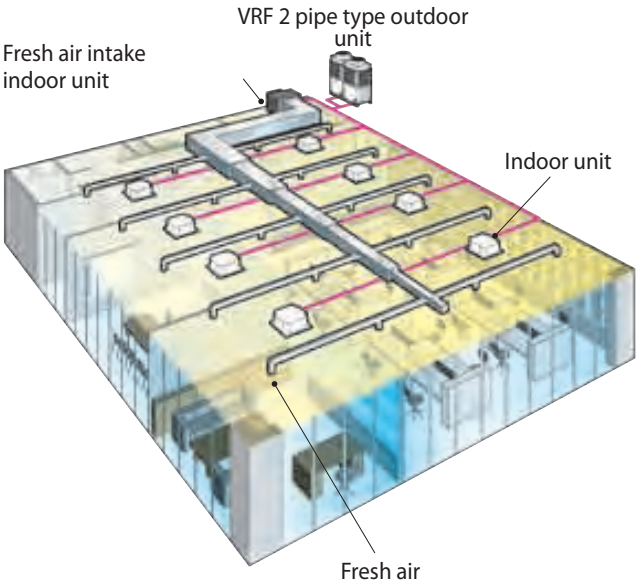
Key features

Pre-heat, pre-cool functions.

Compact dimensions.

TCC-Link control connection.

External static pressure available up to 230 Pa.



Use Conditions

In COOL mode, if temperature of the fresh air is below the setup temp. of +3°C, FAN status is automatically made. When temperature of the fresh air is below 19°C, FAN status is also made regardless of the setup temperature.

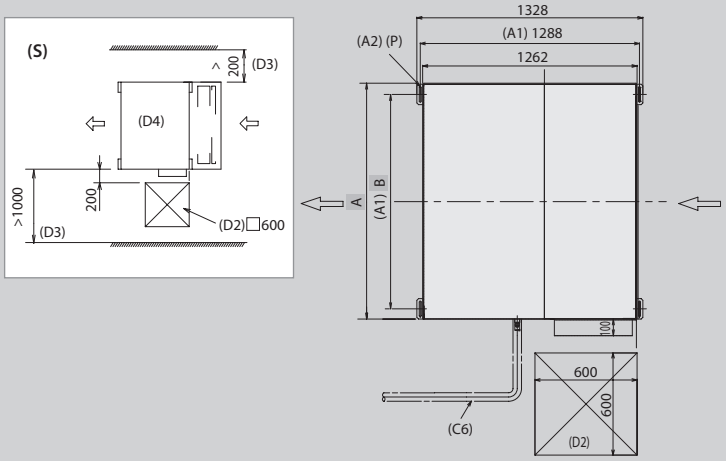
In HEAT mode, if temperature of the fresh air is above the setup temp. –3°C, FAN status is automatically made. When temperature of the fresh air is above 15°C, FAN status is also made regardless of the setup temperature.

Technical specifications **heat pump**

Indoor unit	MMD	AP0481HFE	AP0721HFE	AP0961HFE
Cooling capacity	kW	14,0	22,4	28,0
Heating capacity	kW	8,9	13,9	17,4
Power consumption	kW	0,28	0,45	0,52
Power factor	%	85	78	83
Running current	A	1,43	2,52	2,73
Starting current	A	3,5	7,0	7,0

Indoor unit	MMD	AP0481HFE	AP0721HFE	AP0961HFE
Air flow (h)	m^3/h	1080	1680	2100
Sound level (h/m/l)	dB(A)	45/43/41	46/45/44	46/45/44
Sound power level (h/m/l)	dB(A)	60/58/56	61/60/59	61/60/59
Dimensions (h × w × d)	mm	492 × 892 × 1262	492 × 1392 × 1262	492 × 1392 × 1262
Weight	kg	93	144	144
Air filter		Option or field supply		
External static pressure (h/m/l)	Pa	170(Min)/210(Factory setting)/230(Max)	140(Min)/165(Factory setting)/180(Max)	160(Min)/190(Factory setting)/205(Max)
Connecting pipe (gas – liquid)		5/8" - 3/8"	7/8" - 1/2"	7/8" - 1/2"
Drain port diameter	mm	25	25	25
Operating range - Cooling	°C	5 ÷ 43 °C	5 ÷ 43 °C	5 ÷ 43 °C
Operating range - Heating	°C	–5 ÷ 43 °C	–5 ÷ 43 °C	–5 ÷ 43 °C
Power supply	V-ph-Hz	220/240-1-50		

All sizes

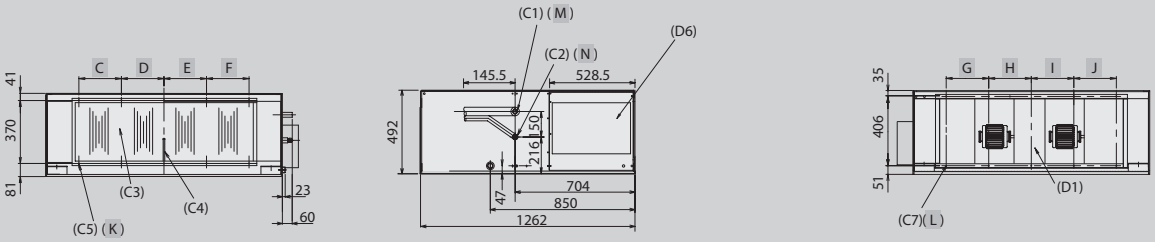


(A1) Hanging bolt pitch
(A2) Long hole for hanging bolt

(C1) Refrigerant pipe connecting port (Gas side)
(C2) Refrigerant pipe connecting port (Liquid side)
(C3) Blow-off port
(C4) Discharge temp sensor
(C5) Discharge port connecting flange (Accessory for main unit of product)
(C6) Refrigerative piping work example at local site
(C7) Suction port connecting flange

(D1) Suction port
(D2) Check port
(D3) Service space
(D4) Fresh air intake indoor unit

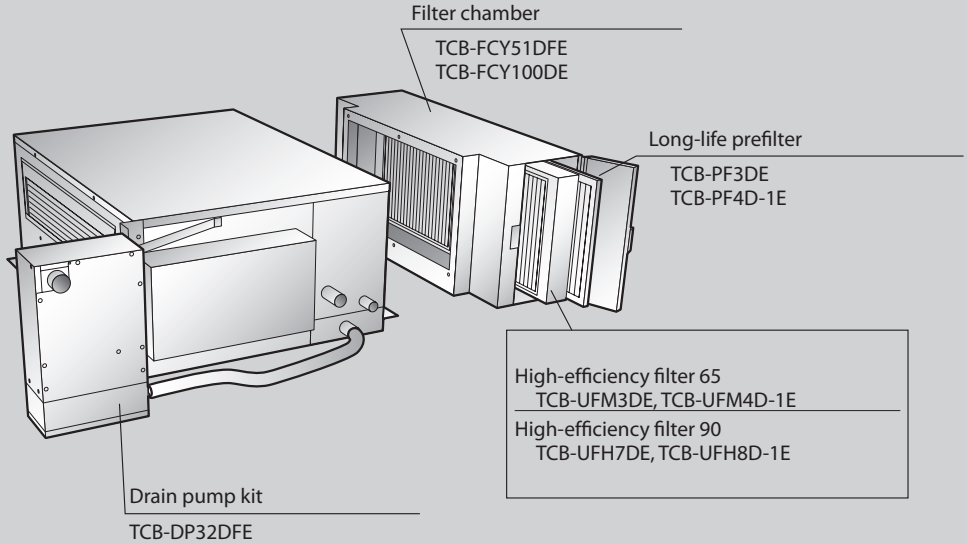
(S) Space required for installation and servicing



(Unit: mm)

Model	MMD-	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
AP0961HFE		1392	1260	250	250	250	250	250	250	250	250	10-M6	10-M6	Ø22.2 brazing	Ø12.7 flare	4-Ø12 x 40
AP0721HFE		1392	1260	250	250	250	250	250	250	250	250	10-M6	10-M6	Ø22.2 brazing	Ø12.7 flare	4-Ø12 x 92
AP0481HFE		892	810	215	107.5	107.5	215	-	250	250	-	8-M6	6-M6	Ø15.9 flare	Ø9.5 flare	4-Ø12 x 92

Options



Accessories

Indoor accessories

Indoor unit	Parts Name	Model Name	Comply with SMMSi FCU	Notes	Remarks
4-way Air Discharge cassette type	Standard panel	RBC-U31PG(W)-E	MMU-AP***2H	Required accessory	Use with TCB-GFC1602UE
	MTO straight, white color panel	RBC-U31PGS(W)-E			
	MTO straight, grey panel	RBC-U31PGS(WS)-E			
	Fresh air and filter chamber	TCB-GFC1602UE2	MMU-AP***2H	For fresh air inlet box For fresh air intake by using the knockout hole and filter chamber.	
	Fresh air inlet box	TCB-GB1602UE2			
	Auxiliary fresh air flange	TCB-FF101URE2	MMU-AP***2H, MH, SH, SPH	For easy fresh air intake by using the knockout hole height 50 mm	
	Spacer for height adjustment	TCB-SP1602UE	MMU-AP***2H		
	Air discharge direction kit	TCB-BC1602UE		Air direction change by cutting off air discharge port (3 pcs.)	
Compact 4-way cassette type	Decoration panel	RBC-UM11PG(W)E	MMU-AP***1MH	Required accessory	
Compact 2-way cassette type	Decoration panel	RBC-UW283PG(W)-E	MMU-AP0072/0092/0122/0152WH	Required accessory	
		RBC-UW803PG(W)-E	MMU-AP0182/0242/0272/0302WH		
		RBC-UW1403PG(W)-E	MMU-AP0362/0484/0562WH		
	Auxiliary fresh air flange	TCB-FF151US-E	MMU-AP***2WH	For easy fresh air intake by using the knockout hole of indoor unit	
	Filter chamber	TCB-FC283UW-E	MMU-AP0072/0092/0122/0152WH		
		TCB-FC803UW-E	MMU-AP0182/0242/0272/0302WH		
		TCB-FC1403UW-E	MMU-AP0362/0484/0562WH		
	Super Long life filter	TCB-LF283UW-E	MMU-AP0072/0092/0122/0152WH	For use with filter chamber	Use with TCB-FC283UW-E
		TCB-LF803UW-E	MMU-AP0182/0242/0272/0302WH		Use with TCB-FC803UW-E
		TCB-LF1403UW-E	MMU-AP0362/0484/0562WH		Use with TCB-LF1403UW-E
1-way cassette type	Decoration panel	RBC-UY136PG	MMU-AP0071/0091/0121YH	Required accessory	
		RBC-US21PGE	MMU-AP0152/0182/0242SH		
	Front air discharge unit	TCB-BUS21WHE			
	Auxiliary fresh air flange	TCB-FF101URE2		For easy fresh air intake by using the knockout hole	
Slim duct type	Auxiliary fresh air flange	TCB-FF101URE2	MMU-AP***2H, MH, SH, SPH	For easy fresh air intake by using the knockout hole	
Concealed duct type	High-efficiency filter 65	TCB-UFM11BFCE	MMD-AP0071/0091/0121BH	Dust collecting effect: 65% (NBS Colorimetric method) for rear suction	Use with TCB-FC281BE
			MMD-AP0241/0271/0301BH (2 pcs.)		Use with TCB-FC801BE
		TCB-UFM21BFCE	MMD-AP0151/0181BH		Use with TCB-FC501BE
			MMD-AP0361/0481/0561BH (2 pcs.)		Use with TCB-FC1401BE
	High-efficiency filter 90	TCB-UFH51BFCE	MMD-AP0071/0091/0121BH	Dust collecting effect: 90% (NBS Colorimetric method) for rear suction	Use with TCB-FC281BE
			MMD-AP0241/0271/0301BH (2 pcs.)		Use with TCB-FC801BE
		TCB-UFH61BFCE	MMD-AP0151/0181BH		Use with TCB-FC501BE
			MMD-AP0361/0481/0561BH (2 pcs.)		Use with TCB-FC1401BE
	Filter chamber	TCB-FC281BE	MMD-AP0071/0091/0121BH	For high efficiency filter for rear suction	
		TCB-FC501BE	MMD-AP0151/0181BH		
		TCB-FC801BE	MMD-AP0241/0271/0301BH		
		TCB-FC1401BE	MMD-AP0361/0481/0561BH		
	High-efficiency filter 65	TCB-UFM11BE	MMD-AP0071/0091/0121BH	Dust collecting effect: 65% (NBS Colorimetric method) for underside suction	
		TCB-UFM21BE	MMD-AP0151/0181BH		
		TCB-UFM31BE	MMD-AP0241/0271/0301BH		
		TCB-UFM41BE	MMD-AP0361/0481/0561BH		
	High-efficiency filter 90	TCB-UFH51BE	MMD-AP0071/0091/0121BH	Dust collecting effect: 90% (NBS Colorimetric method) for underside suction	
		TCB-UFH61BE	MMD-AP0151/0181BH		
		TCB-UFH71BE	MMD-AP0241/0271/0301BH		
		TCB-UFH81BE	MMD-AP0361/0481/0561BH		
	Ceiling panel	RBC-UD281PE(W)	MMD-AP0071/0091/0121BH	half panel for underside suction	
		RBC-UD501PE(W)	MMD-AP0151/0181BH		
		RBC-UD801PE(W)	MMD-AP0241/0271/0301BH		
		RBC-UD1401PE(W)	MMD-AP0361/0481/0561BH		
	Suction canvas	TCB-CA281BE	MMD-AP0071/0091/0121BH	Adjustment height of the suction canvas between 40 & 100mm for underside suction	
		TCB-CA501BE	MMD-AP0151/0181BH		
		TCB-CA801BE	MMD-AP0241/0271/0301BH		
		TCB-CA1401BE	MMD-AP0361/0481/0561BH		
	Filter kit for underside	TCB-FK281BE	MMD-AP0071/0091/0121BH	Kit of underside prefilter & shielding plate of rear suction	
		TCB-FK501BE	MMD-AP0151/0181BH		
		TCB-FK801BE	MMD-AP0241/0271/0301BH		
		TCB-FK1401BE	MMD-AP0361/0481/0561BH		
Concealed Duct high static pressure type and fresh air intake unit type	High-efficiency filter 65	TCB-UFM1D-1E	MMD-AP0181H	Dust collecting effect: 65% (NBS Colorimetric method)	Use with TCB-FCY21DE
			MMD-AP0481H (2 pcs.)		Use with TCB-FCY51DE
		TCB-UFM2D-1E	MMD-AP0241/0271/0361H (2 pcs.)		Use with TCB-FCY31DE
		TCB-UFM3DE	MMD-AP0721/0961H MMD-AP0721/0961HFE		Use with TCB-FCY100DE or TCB-PF3DE (HFE)
	High-efficiency filter 90	TCB-UFH5D-1E	MMD-AP0181H	Dust collecting effect: 90% (NBS Colorimetric method)	Use with TCB-FCY21DE
			MMD-AP0481H (2 pcs.)		Use with TCB-FCY51DE
		TCB-UFH6D-1E	MMD-AP0241/0271/0361H (2 pcs.)		Use with TCB-FCY31DE
		TCB-UFH7DE	MMD-AP0721/0961H MMD-AP0721/0961HFE		Use with TCB-FCY100DE or TCB-PF3DE (HFE)
	Long life prefilter	TCB-PF1D-1E	MMD-AP0181H	Dust collecting effect: 50% (NBS Colorimetric method)	Use with TCB-FCY21DE
			MMD-AP0481H (2 pcs.)		Use with TCB-FCY51DE
		TCB-PF2D-1E	MMD-AP0241/0271/0361H (2 pcs.)		Use with TCB-FCY31DE
		TCB-PF3DE	MMD-AP0721/0961H MMD-AP0721/0961HFE		Use with TCB-FCY100DE or TCB-PF3DE (HFE)
	Filter chamber	TCB-FCY21DE	MMD-AP0181H	For high efficiency filter or long life prefilter	
		TCB-FCY31DE	MMD-AP0241/0271/0361H		
		TCB-FCY51DE	MMD-AP0481H		
		TCB-FCY100DE	MMD-AP0721/0961H MMD-AP0721/0961HFE		
	Drain pump kit	TCB-DP31DE	MMD-AP0181H to AP0481H	Lift up to 330 mm	
		TCB-DP32DE	MMD-AP0721/0961H		
Fresh air intake type	High-efficiency filter 65	TCB-UFM4D-1E	MMD-AP0481HFE	Dust collecting effect: 65% (NBS Colorimetric method)	Use with TCB-PF4D-1E
	High-efficiency filter 90	TCB-UFH8D-1E	MMD-AP0481HFE	Dust collecting effect: 90% (NBS Colorimetric method)	
	Long life pre-filter	TCB-PF4D-1E	MMD-AP0481HFE	Dust collecting effect: 50% (NBS Colorimetric method)	Use with TCB-FCY51DFE
	Filter chamber	TCB-DP32DFE	MMD-AP0481/0721/0961HFE	For high efficiency filter or long life prefilter	
	Drain pump kit	TCB-DP32DFE	MMD-AP0481/0721/0961HFE	Lift up to 330 mm	
Ceiling-suspended type	Drain pump kit	TCB-DP22CE2	MMC-AP0151/0181H	Lift up to 600 mm	Use TCB-KP12CE2
			MMC-AP0241-0481H		Use TCB-KP22CE2
	Elbow Piping Kit	TCB-KP12CE2	MMC-AP0151/0181H	Needed when drain pump kit is used	
		TCB-KP22CE2	MMC-AP0241-0481H		

Combination Pattern

1) Accessory for 4-way air discharge cassette type: combination pattern

		1	2	3	4	5	6
1	Ceiling panel		OK	OK	OK	OK	OK
2	Fresh air inlet box + Fresh air and filter chamber	OK			OK	—	OK
3	Fresh air and filter chamber	OK			OK	OK	OK
4	Auxiliary fresh air flange	OK	OK	OK		OK	OK
5	Spacer for height adjustment	OK	—	OK	OK		OK
6	Air discharge direction kit	OK	OK	OK	OK	OK	

2) Accessory for concealed duct type: combination pattern

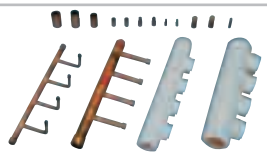
		1	2	3	4	5	6	7	9
		For rear suction			For underside suction				
1	High-efficiency filter 65 (for rear suction)		—	OK	—	—	—	—	—
2	High-efficiency filter 90 (for rear suction)	—		OK	—	—	—	—	—
3	Filter chamber (for rear suction)	OK	OK		—	—	—	—	—
4	High-efficiency filter 65 (for underside suction)	—	—	—		—	OK	OK	OK
6	High-efficiency filter 90 (for underside suction)	—	—	—	—		OK	OK	OK
7	Ceiling panel (half panel for underside suction)	—	—	—	OK	OK		OK	OK
8	Suction canvas (for underside suction)	—	—	—	OK	OK	OK		OK
9	Filter kit for underside*	—	—	—	OK	OK	OK	OK	

* In case of underside,Filter kit is required accessory

3) Accessory for concealed duct high static pressure type/fresh air intake indoor unit type: combination pattern

		1	2	3	4	5
1	High-efficiency filter 65		—	OK	OK	OK
2	High-efficiency filter 90	—		OK	OK	OK
7	Long life prefilter	OK	OK		OK	OK
8	Filter chamber	OK	OK	OK		OK
9	Drain pump kit	OK	OK	OK	OK	

Refrigerant Accessories

	Appearance	Model name	Usage (Classification according to indoor unit capacity code)	
Y-shape branching joint		RBM-BY55E	Total below 6,4	
		RBM-BY105E	Total 6,4 or more and below 14,2	
		RBM-BY205E	Total 14,2 or more and below 25,2	
		RBM-BY305E	Total 25,2 or more	
Branch headers	 (4-branch headers)	RBM-HY1043E	Total below 14,2	(Max.4 branches)
		RB M -HY2043E	Total 14,2 or more and below 25,2	(Max.4 branches)
		RBM-HY1083E	Total below 14,2	(Max.8 branches)
		RBM-HY2083E	Total 14,2 or more and below 25,2	(Max.8 branches)
Branching joint for connection of outdoor units		RBM-BT14E	Below 26	
		RBM-BT24E	26 or more	

Individual Remote Controllers

Wirless control

IR Remote Control
The wireless remote controller can be used with the appropriate indoor units to give full control of the indoor units.
Standard control buttons always available with increased control available from additional buttons hidden under a sliding screen. Includes a temperature sensor that can be used in place of the return air temperature sensor in the Indoor Unit.
Fault codes are displayed.

TCB-AX21E2

Integral receivers

Mountable on the corner pocket of the cassette unit
To be used with: new 4-Way cassette units.
W model is for white cassette panels
WS model is for white/grey cassette panels

RBC-AX31U(W)-
RBC-AX31U(WS)-E

Receiver mountable in the frame of the front panel.
To be used with: Ceiling units, 1-way cassette units.

RBC-AX22CE2

Receiver mountable in the frame of the front panel.
To be used with: new 2-way cassette units.

RBC-AX23UW(W)-E

Wall or ceiling mountable receiver.
To be used with: all the indoor units, more specifically targeted to ducted units.

TCB-AX21E2

Wired control

Wired Control

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.

RBC-AMT32E

Simplified Control

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.

RBC-AS21E2

Remote controller with weekly timer (7-day timer function)

This controller is based on the RBC-AMT32E controller but has the additional control provided from a built in 7-Day Timer function.
Wide range of programs: Operation time, Operation start/stop, Operation mode, Temperature setting, Restriction on button operation

RBC-AMS41E

Schedule timer

The Schedule Timer is an advanced control device that can be used to control Indoor Unit parameters based on a timed schedule, and has two possible modes of operation to choose from, these are:
Weekly Timer Mode
The timer is connected to an Indoor Unit via a local or central remote controller.
Schedule Timer Mode
The timer is connected directly to the TCC Link Central Control network and can set timer functions for up to 64 Indoor Units in up to 8 programmable control groups.

TCB-EXS21TLE

Central controls

Central Controller

TCB-SC642TLE2

The central controller can control all the individual fuctions of 64 indoor units individually. Malfunction checks are available for each indoor unit. This controller can also connect to the weekly timer.
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.

On-Off controller

TCB-CC163TLE2

It is a 16-Way ON/OFF controller for use with all indoor units.
It is a simplified central control device that can be connected to up to 16 Indoor units via the TCC-Link Central Control network to provide simple "1 touch" ON/OFF control for those connected Indoor Units.
This Controller can be installed on any of the four fixed Zone addresses by changing of Dip Switch Settings.

Compliant Manager

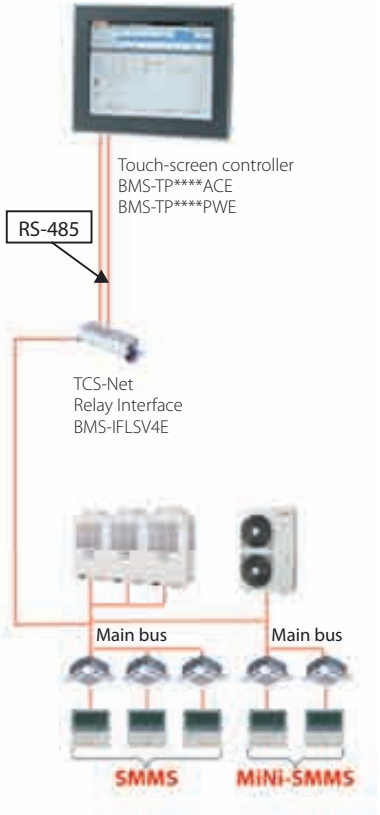
BMS-CM1280TLE
BMS-CM1280FTLE*

This Controller is an advanced Central Control device that can be connected to up to 128 Indoor Units (2 x 64 IDU TCC-Link Connections).
The High-Spec model has the same hardware control function as the standard version, but also has the ability of control from a Local Area Network and , with the addition of an additional Interface, is capable of Energy Monitoring and report creation functions.
This controller is ideal where advanced control, Energy Monitoring, advanced scheduling or access to individual air Conditioners is required from networked computer systems.

Touch Screen

BMS-TP0641ACE
BMS-TP05121ACE
BMS-TP0641PWE
BMS-TP5121PWE

The Touch Screen Controller can be connected to 64 or 512 Indoor Units depending on model and offers Energy Monitoring and schedule program functions.
This controller is ideally suited to any small or large installation where Energy monitoring functions are required, or where a professional and highly presentable finish is required.
It can control each of the individual indoor units and is capable of providing information from the indoor unit settings and malfunction check codes.
The Touch Screen is connected to the air conditioner control network directly by relay interfaces. Password function available.



Web based controls

BMS-WB2561PWE
(Gateway Server)

This is an advanced Central Control device designed for use with large installations or where high-level control and/or energy monitoring functions are required.
One major benefit of the Web Based Controller over other Central Control systems is the ability to automatically retransmit system alarms to up to 8 programmed email addresses.
It is also possible to specify which units will send alarms to each of the different email addresses.

BMS-WE01GTE
(WEB Server)

With the use of this additional Web Based Controller Master - BMS-WB01GTE - device it ispossible to connect up to 2,048 Indoor Units into this control system.
This is carried out using the Master device as a hub for multiple Web Based Controllers.

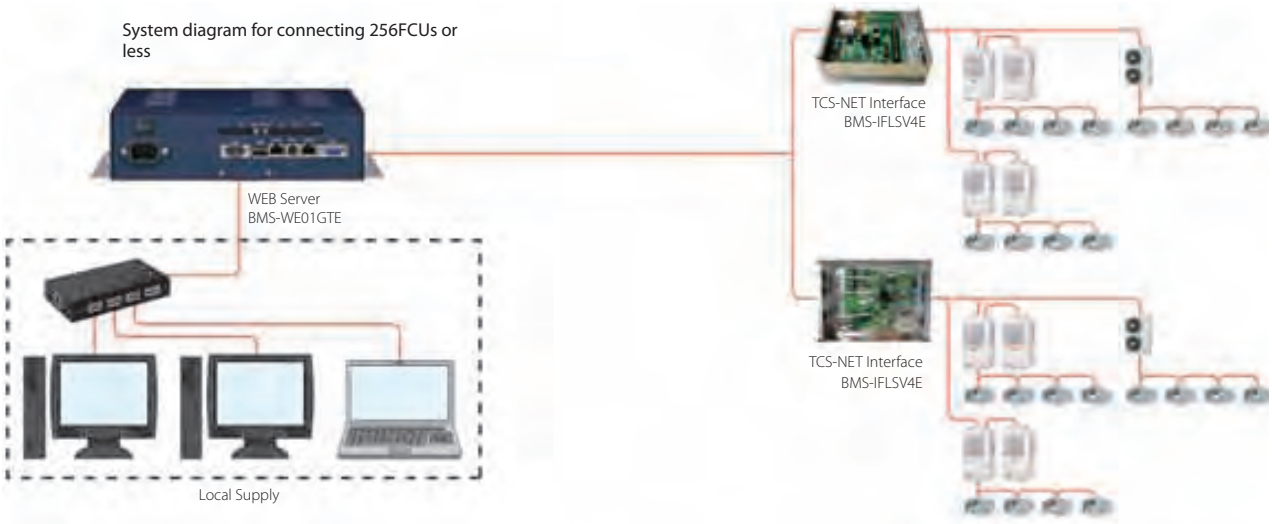
Relay Interfaces

BMS-IFLV4E
For TCS-NET

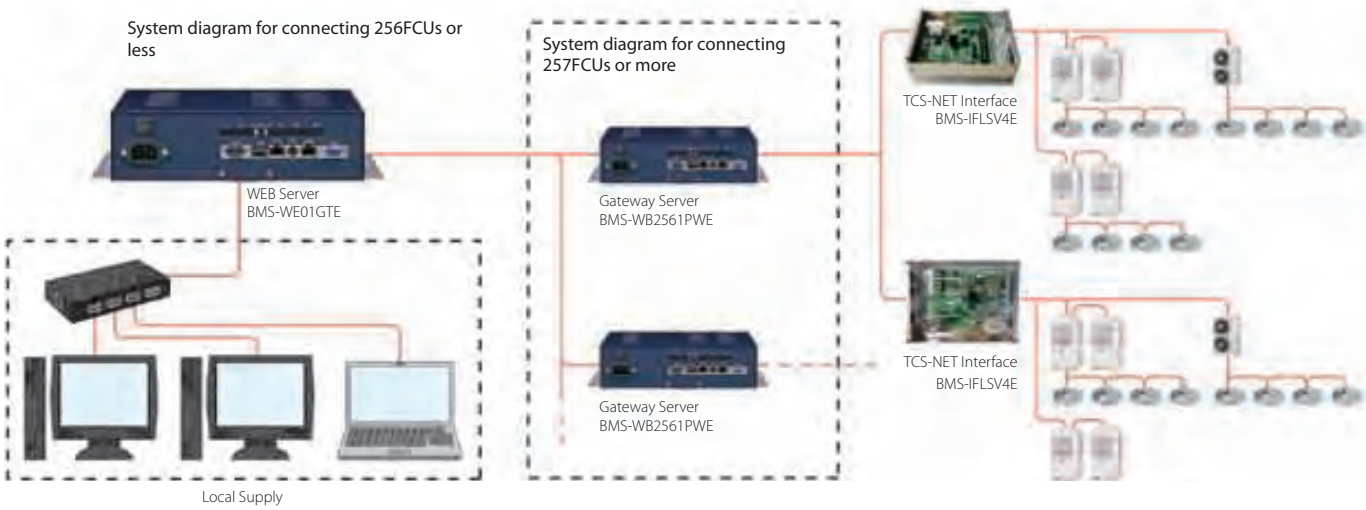
BMS-IFWH5E
For Energy Monitoring

BMS-IFDD03E
For Digital I/O

BMS-WB2561PWE (Web Server/Gateway)



BMS-WB01GTE (Master Server)



Building Management systems

A Building Management System (BMS) is a computer based control system that is installed in buildings to control and monitor mechanical and electrical equipment, such as Ventilation, lighting, power systems, fire systems and security for that building.
The core function of most BMS systems is to manage the environment within the building and can be used to control heating and cooling equipment and manage the systems that distribute the treated air throughout the building.

BACnet® gateway

BACnet®

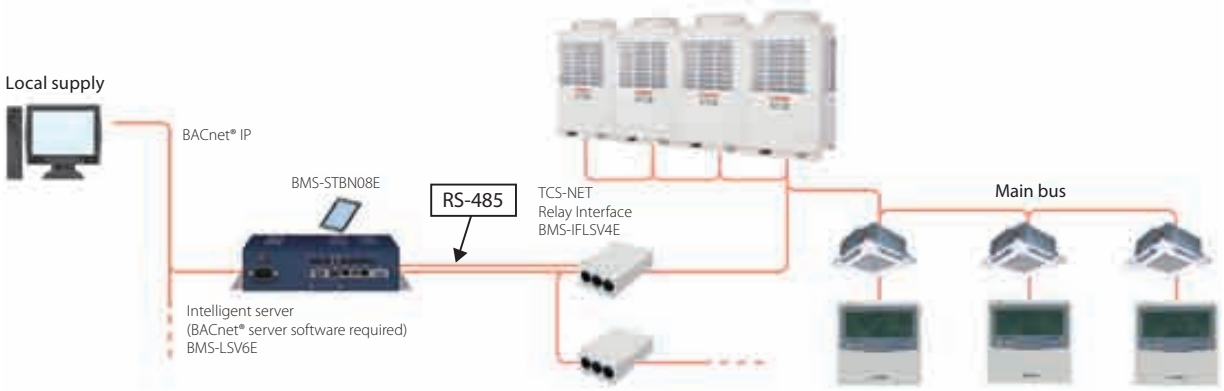
BMS-LSV6E

The Toshiba BACnet® control system consists the BMS-LSV6E Intelligent server and the BMSSTBN08E BACnet server software, and can be connected to the TCC-Link Central Control Network via a TCS-Net Relay Interface to enable control of the attached Air Conditioner product from a BACnet building management system.

Analogue Interface

TCB-IFCB640TLE

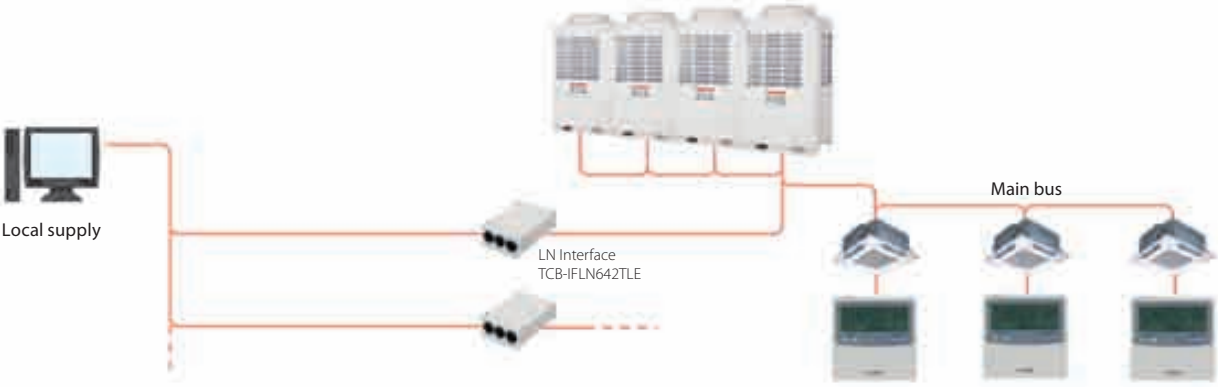
That Analogue Relay Interface product is a device that can be connected directly to the TCC-Link Central Control network to provide Analogue & Digital Inputs & Outputs for control over Toshiba Air Conditioner products from non-Toshiba Control systems. This Interface is the ideal design for Integrating the Toshiba Air Conditioner product into basic BMS control systems, such as may be found in older controls systems.



LonWorks® LN Interface

TCB-IFLN642TLE

The Toshiba Lonworks interface 100 % LonMark Compliant and is designed to connect the Toshiba Air Conditioning system to a Lonworks Building Management Control System.
This Interface connects directly to the Toshiba TCC-Link Central Control Network on the Air Conditioner side and can be wired on the Indoor or outdoor side depending on preference.
The Interface is then connected to the Lonworks Building Management Control system where it provides 28 Network variables for the sending of Control Commands and receiving unit information.
Multiple Toshiba Lonworks Interfaces can be connected to a single TCC-Link Network and addressed using simple switches provided on the device. This is to enable ease of installation, especially in buildings with separate areas where 1 Interface may be used for each area/floor.



Building Management Systems

Modbus® Interface

TCB-IFMB640TLE

The Toshiba Modbus® interface is designed to connect the Toshiba Air Conditioning system to a Modbus Building Management System.
The Toshiba Interface connects directly to the Toshiba TCC-Link Central Control Network on the Air Conditioner and can be wired on the Indoor or outdoor side depending on preference.
The Interface then uses the Modbus RTU protocol based on the RS-485 type serial communications protocol to connect to a suitable Modbus Master device.
Finally, this Modbus Master device is connected to the BMS control system and allows control of all connected Toshiba Air Conditioner equipment from that BMS control system.
Multiple Toshiba Modbus Interfaces can be connected to a single TCC-Link Network and addressed using simple switches provided on the device.
This is to enable ease of installation, especially in buildings with separate areas where 1 Interface may be used for each area/floor.

Control PC Boards

For the SMMSi are available also a number of Control accessory PC Boards for use with Indoor and Outdoor units

Model number	Reference	Description	Used with
TCB-PCMO4E	External Master On/Off control	External Master On/Off control board	VRF outdoor units
TCB-PCIN4E	Error Output Control Board	Error output control board	VRF outdoor units
TCB-PCDM4E	Power Peak Cut Control Board	Power Peak Cut Control Board	VRF outdoor units
TCB-IFCG1TLE	General purpose interface	enables control of A/C by the DI/DO and AI/AO	Daisekai, DI, SDI, VRF. Combination with TCB-IFCB640TLE
TCB-IFCB640TLE	Analog interface	Control & monitoring up to 64 IU on TCC-link	Combination with TCB-IFCG1TLE
TCB-IFGSM1E	GSM control interface	Allows ON/OFF control, operation status monitoring & alarm monitoring of A/C	VRF, DI, SDI (CN61) & Daisekai (CN08 or 09)
TCB-PCOS1E2	Application control kit	Enables night operation control, demand control, operation monitoring	All DI units
TCB-IFCB-4E2	Remote location On/Off Control Box	Enables remote location On/Off control	All indoor units

VRF Range

VRF.
The freedom of choice

Variable refrigerant flow offer the advantages of direct expansion linked to inverter control and the most sophisticated electronics.
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 requirement.
In addition to the new SMMS-i, the Toshiba VRF has two additional systems: SHRM (Super Heat Recovery Multi) provides simultaneous heating and cooling and MiNi-SMMS, the compact system ideal for small spaces.

Typical applications and advantages

VRF systems offer safety, reliability, comfort, flexibility, ease of installation, durability and energy savings.
More and more commercial centres, office towers, hospitals and hotels, all typically requiring the benefit of energy savings, have selected this type of system.
Now, these systems also play an important role in prestigious residential installations, where more than one room needs to be air-conditioned.
In addition, direct-expansion indoor units offer many benefits: easy and low-cost installation and precise performance.
The range also includes a complete series of heat exchanger ventilation units to supply fresh air for the rooms in a building.

Energy savings according to Toshiba

The advanced electronic technology in these systems permits capacity control that results in outstanding energy savings, especially at partial load.
This objective is achieved thanks to the use of sophisticated inverter control and modulating control valves in each indoor unit.
In addition, the power input of the outdoor unit is dramatically reduced with the heat load reduction in the areas served.
No particular routine maintenance is required, except periodic cleaning of the indoor unit filters: this also means that maintenance costs are minimised.

MCY-MAP***1HT

MiNi-SMMS VRF Outdoor unit

Features

The MiNi-SMMS system has been developed to achieve the best performance in a wide variety of commercial applications including shops, offices and large apartments, where unobtrusive appearance and quiet operation are important advantages.

The extraordinary flexibility of this Toshiba system is guaranteed by the breadth of the range of SMMS indoor units – up to 13 models with a combination of 81 units. MiNi-SMMS can be easily installed.

Key features

Best COP (4,61 for 4HP): represents state-of-art energy saving efficiency.

Wide range: up to 9 indoor units may be connected with a single outdoor unit.

DC Twin Rotary compressor delivers high efficiency and complete reliability.

Full SMMS indoor and control units available.

The compact design of the outdoor unit (70% smaller overall than standard VRF unit) means it can be easily installed virtually anywhere; including on a balcony.

Technical specifications **heat pump**

Outdoor unit		HP	MCY-MAP0401HT 4 HP	MCY-MAP0501HT 5 HP	MCY-MAP0601HT 6 HP
Cooling capacity	kW		12,1	14,0	15,5
Power input	kW	CO	2,82	3,47	4,63
EER	W/W		4,29	4,03	3,35
Running current	A	CO	13,2	16,1	21,4
Heating capacity	kW		12,5	16,0	18,0
Power input	kW	HP	2,71	4,00	4,85
COP	W/W		4,61	4,00	3,71
Running current	A	HP	12,5	18,3	22,2
Maximum running current	A		25	28	31
Maximum overcurrent protection	A		32	32	40
Air flow	m^3/h – l/s		5820 – 1612	6120 – 1695	6420 – 1778
Sound pressure level	dB(A)	CO/HP	49/50	50/52	51/53
Sound power level	dB(A)	CO/HP	66/67	67/69	68/70
Operating range – db	°C	CO	–5 ÷ 43	–5 ÷ 43	–5 ÷ 43
Operating range – wb	°C	HP	–15,0 ÷ 15,5	–15,0 ÷ 15,5	–15,0 ÷ 15,5
Dimensions (h × w × d)	mm		1340 × 900 × 320	1340 × 900 × 320	1340 × 900 × 320
Weight	kg		117	117	117
Compressor type			Twin Rotary	Twin Rotary	Twin Rotary
Refrigerant charge R410A	kg		7,2	7,2	7,2
Suction line type – diameter			Flare – 5/8	Flare – 5/8	Brazing – 3/4
Liquid line type – diameter			Flare – 3/8	Flare – 3/8	Flare – 3/8
Maximum equivalent length separation*	m		125	125	125
Maximum actual piping separation*	m		100	100	100
Maximum total pipe length*	m		180	180	180
Maximum lift (Indoor unit above/below)	m		20/30	20/30	20/30
Power supply	V-ph-Hz		220-240-1-50	220-240-1-50	220-240-1-50

* when PMV Kit is used: Maximum equivalent length separation (80 m); Maximum actual piping separation (65 m); Maximum total pipe length (150 m)

CO = cooling mode
HP = heating mode

MMY-MAP***2FT8-E

SHRM
VRF Outdoor unit

Features

The three-pipe VRF Super Heat Recovery Multi System (SHRM) delivers simultaneously cooling and heating and has exceptional energy efficiency.

Key features

Unbeatable energy consumption efficiency: average COP of 3,97 (22,4 kW).

Compact flow selector unit: it automatically adjusts the temperature either by unit or by area.

Piping branch flexibility: the three-pipe connection allows installation height variation of 35 m (equivalent to a 9-story building).

Active Oil Management system: it increases the operation reliability.

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

Technical specifications **heat pump**

Outdoor unit			MMY-MAP0802FT8-E 8 HP	MMY-MAP1002FT8-E 10 HP	MMY-MAP1202FT8-E 12 HP
Cooling capacity[1]	kW		22,4	28	33,5
Power input	kW	CO	6,07	8,54	12,9
EER	W/W		3,69	3,28	2,6
Running current	A	CO	9,25	13,15	19,85
Heating capacity[2]	kW		25	31,5	35,5
Power input	kW	HP	6,29	8,73	9,65
COP	W/W		3,97	3,61	3,68
Running current	A	HP	9,55	13,4	14,85
Maximum running current	A		20	22,5	24,5
Maximum overcurrent protection	A		30	30	30
Air flow	m^3/h – l/s		9900 – 2742	10500 – 2909	10500 – 2909
Sound pressure level – at 1 m	dB(A)	CO/HP	57/58	58/59	59/60
Sound power level	dB(A)	CO/HP	77/78	78/79	79/80
Operating range – db	°C	CO	–10 ÷ 43	–10 ÷ 43	–10 ÷ 43
Operating range – wb[4]	°C	HP	–20 ÷ 16	–20 ÷ 16	–20 ÷ 16
Dimensions (h × w × d)	mm		1800 × 990 × 750	1800 × 990 × 750	1800 × 990 × 750
Weight	kg		263	263	263
Compressor type			Twin Rotary	Twin Rotary	Twin Rotary
Refrigerant charge R410A	kg		11,5	11,5	11,5
Suction line type – diameter			Brazed – 7/8	Brazed – 7/8	Brazed – 1 - 1/8
Liquid line type – diameter			Flare – 1/2	Flare – 1/2	Flare – 1/2
Discharge line connection type – diameter			Brazed – 3/4	Brazed – 3/4	Brazed – 3/4
Maximum equivalent length separation	m		150	150	150
Maximum actual piping separation	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(380-415V)-3-50		

[1] based on an indoor air temperature of 27 °C db/19 °C wb and an outdoor air temperature of 35 °C db
[2] based on an indoor air temperature of 20 °C db and an outdoor air temperature of 7 °C db/6 °C wb
[3] if outdoor units are combined, refer to the installation manual
[4] the unit can be operated even if outdoor temperature gets down to –20 °C, however note that the warranty covers only up to –15 °C because operation beyond that temperature is out of specification. When outdoor air temperature falls to under –15 °C, it may cause shortening the product lifetime

CO = cooling mode
HP = heating mode

TOSHIBA

Leading Innovation

Notice: Toshiba is committed to continuously improving its products to ensure the highest quality and reliability standards, and to meet local regulations and market requirements. All features and specifications are subject to change without prior notice.

TOSHIBA AIR CONDITIONING

Advancing the eco -evolution

SMMS-i 201007-AD