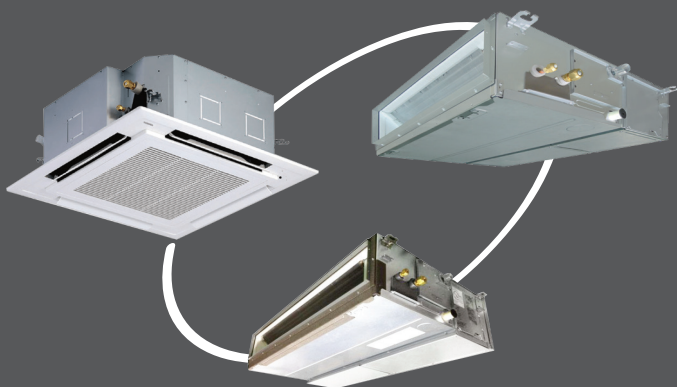


TOSHIBA

EXPERIENCE
THE FUTURE NOW



Light Commercial Inverter





➤ Toshiba Air Conditioning Absolute comfort

Toshiba's commitment to world-class efficiency, versatile scalability and trusted quality results in cutting-edge technology that gives our customers industry leading solutions for their needs. Toshiba Air Conditioning is a global provider of a comprehensive range of innovative air conditioning solutions with trusted, world class reliability. With several "World's Firsts" to its credit, Toshiba Air Conditioning has been the reliable source of next generation, energy efficient products and solutions for over 30 years.

Toshiba's commitment to people drives attention to detail at every stage of the development process, from design to user field tests. As a result, Toshiba products and systems feature higher standard of indoor air quality, low sound levels, energy savings and unrivaled comfort along with environmental sustainability.

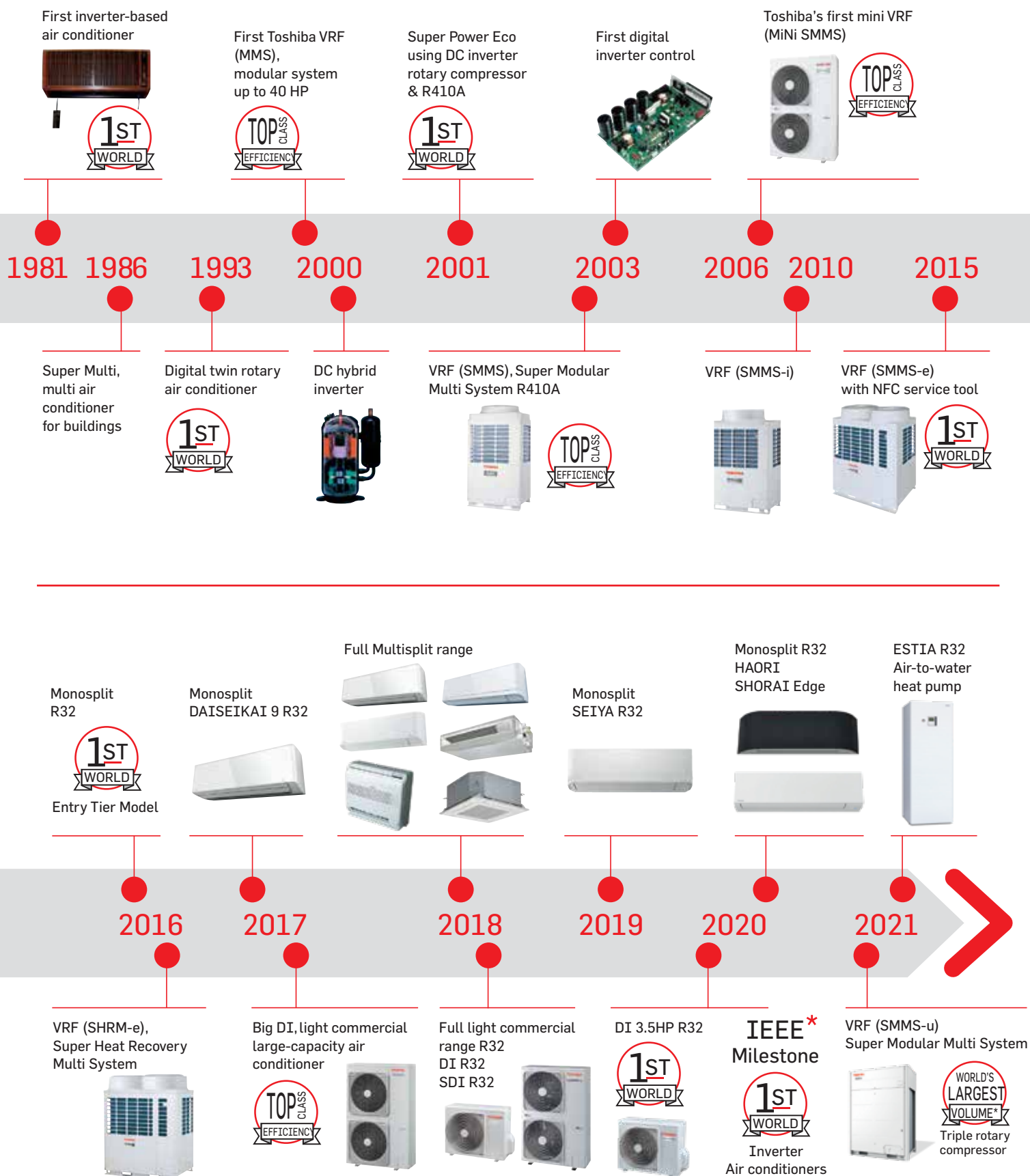
➤ A Global Innovation Network

Toshiba Air Conditioning has research and development centers across Japan, Europe, Thailand and China. Its global research activities are managed and integrated to ensure all research sites collaborate to provide innovative solutions to customers across the world. The Toshiba brand holds more than 1200 patents in Japan and abroad, an outstanding number for any company.

Each year since 1994, Toshiba Air Conditioning has received prestigious awards for its significant achievements in air conditioning and in November 2020 the world's-first inverter split air conditioner that Toshiba developed and mass produced for commercial and residential applications in 1980 and 1981, respectively, was recognized by the Institute of Electrical and Electronics Engineers (IEEE) as an IEEE milestone for the historic significance of the achievement in electrical and electronics industry.

This demonstrates Toshiba's innovative spirit and a relentless drive to improve its products and systems.

> ALWAYS ONE STEP AHEAD



* In 2020, the Institute of Electrical and Electronics Engineers awarded Toshiba for the invention of the Inverter Air Conditioner and the significant contribution made by the Toshiba Inverter to the advancement of society and industry.



> LIGHT COMMERCIAL INVERTER

Solutions for professionals, by professionals













Toshiba Inverter Light Commercial Systems are extremely compact units that provide exceptional operational savings. With state-of-the-art technology, flexible controls and improved installation flexibility, they ensure comfort and convenience for business, large residential applications and others installations.











Toshiba Inverter Light Commercial Systems offer a complete range of indoor units to suit a comprehensive range of commercial and large residential requirements. The range has been expanded with maximum cooling capacities to benefit commercial applications with larger heat loads.

Features

- R410A refrigerant.
- Improved energy saving resulting from DC motor in the indoor units.
- Ease and flexibility of installation.
- Aqua resin magic coil in FCU prevents dirt accumulation ensuring healthy air and improved IAQ.
- Fireproof electrical enclosure for both indoor and outdoor unit.

> Product lineup

Type Cooling only	Size	18	24	30	36	48	60
	kW	5.3	6.6	8.8	10.1	12.5	14.2
	HP	2.0	3.0	3.3	4.0	5.0	7.0
Standard duct							
	Cooling only	RAV-SH1801BP-AE	RAV-SH2401BP-AE	RAV-SH3001BP-AE	RAV-SH3601BP-AE	RAV-SH4801BP-AE	RAV-SH6001BP-AE1
Condensing unit							
	Cooling only	RAV-SHB1801AP-AE	RAV-SHB2401AP-AE	RAV-SHB3001AP-AE	RAV-SHB3601AP-AE	RAV-SHB4801A8P-AE	RAV-SHB6001A8P-AE

Type Cooling only	Size	18	24	30	36	48
	kW	5.3	7.1	8.8	10.6	12.5
	HP	2.0	3.0	3.3	4.0	5.0
4-way cassette						
	Cooling only	RAV-SH1801UP-AE	RAV-SH2401UP-AE	RAV-SH3001UP-AE	RAV-SH3601UP-AE	RAV-SH4801UP-AE
Condensing unit						
	Cooling only	RAV-SHU1801AP-AE	RAV-SHU2401AP-AE	RAV-SHU3001AP-AE	RAV-SHU3601AP-AE	RAV-SHU4801A8P-AE



> Features

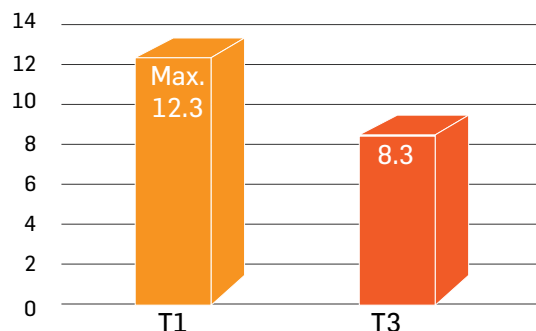
High efficiency

Toshiba's unique combination of twin rotary compressor and all inverter driven control contribute to guaranteed accuracy and high efficiency.



>>> Realize high efficiency both* T1 and T3

EER: (Btu/h)/W



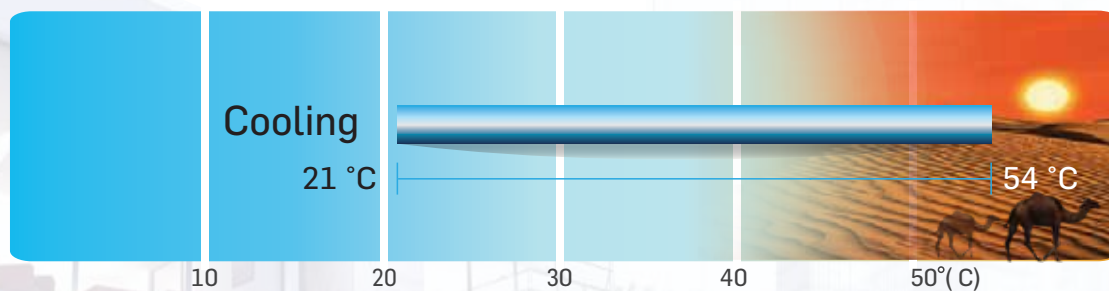
*T1 EER 12.3 by 2 Ton Standard Duct

Condition

T1 : Indoor air temperature 27°C DB / 19°C WB, Outdoor air temperature 35°C DB
T3 : Indoor air temperature 29°C DB / 19°C WB, Outdoor air temperature 46°C DB

Outside temperature

Designed for the Middle East, the LC-Inverter has a wide operating range complimented by the high reliability of twin rotary compressors.



Protection circuit

Toshiba's LC Inverter offers a protection circuit (as standard) that protects the PC board under unstable power supply* and a function that detects incorrect wiring of the power supply for the 3-Phase product.

*3Phase 380-400V 10%



Black out

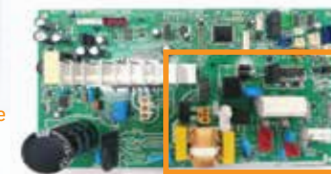


Temporary lower voltage



Unstable power supply

>>> Protection circuit*



Protection circuit

Thunder surge protection

Surge absorber device is added to protect the whole PCB from the high current like thunder surge up to 10,000 voltage.

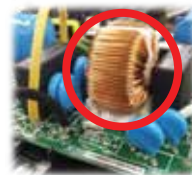


10,000V
THUNDER SURGE



Noise filter

The system includes a noise filter to prevent voltage fluctuation ensuring that the air conditioner operates smoothly and with highly reliability.



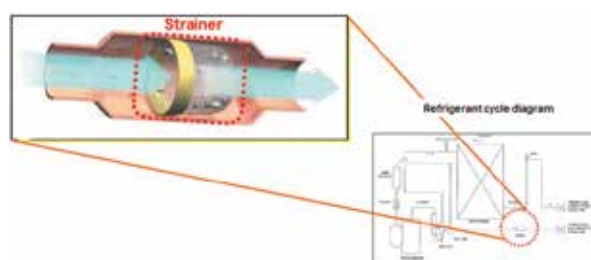
Twin rotary compressor

Toshiba's unique combination of twin rotary compressor and all inverter driven control with R410A refrigerant contribute to guaranteed accuracy and enables our customers to benefit from the expertise of flawless Japanese technology.



Strainer in gas pipe

The Toshiba LC Inverter has a strainer in the gas pipe that removes dust and metal abrasion powder.



Fireproof electrical enclosure

Fully fireproof electrical enclosure for both indoor and outdoor units ensures safety by preventing fire spread, explosions and fire-burn.





Ducted with DC motor

RAV-SH****BP



2.0, 3.0 and 3.3 HP



4.0 and 5.0 HP

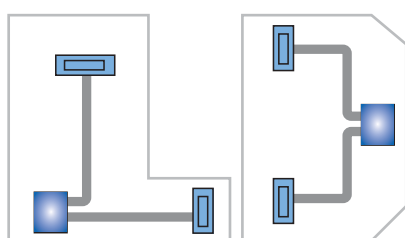


7.0 HP

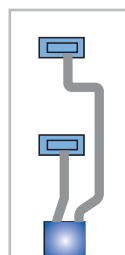
> Features

Flexible ducting options for complete design flexibility

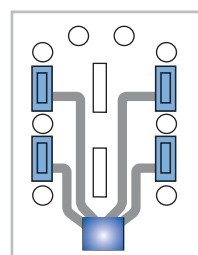
Suitable for ducted applications, Toshiba Ducted Units offer complete design flexibility and operate with high static pressure to ensure that all areas of the room can be reached for an even temperature distribution, irrespective of the complexity of layouts.



Polygonal rooms



Narrow rooms



Rooms with fixture
and obstacles

High static pressure and Air volume

1.5 Ton; Max 120Pa & 1,500 m³/h (30Pa)
2.0 Ton; Max 120Pa & 1,500 m³/h (30Pa)
2.5 Ton; Max 160Pa & 2,000 m³/h (50Pa)

3.0 Ton; Max 180Pa & 2,300 m³/h (50Pa)
4.0 Ton; Max 180Pa & 3,000 m³/h (50Pa)
5.0 Ton; Max 180Pa & 3,600 m³/h (50Pa)

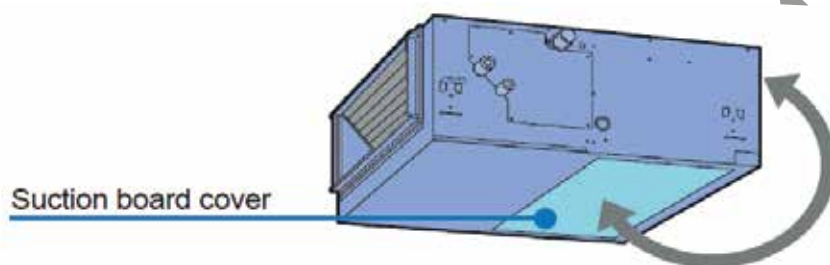
Fireproof electrical enclosure

Fully fireproof electrical enclosure for both indoor and outdoor units ensures safety by preventing fire spread, explosions and fire-burn.

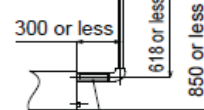


Installation flexibility

- Drain pump is standard for size 18 - 48 (Size 60 optional)
- Air filter is standard for size 18 - 30 (Size 36, 48 and 60 optional)
- Back or under air intake is selectable
- High-lift drain pump



High -lift drain pump :
850 mm, from bottom side

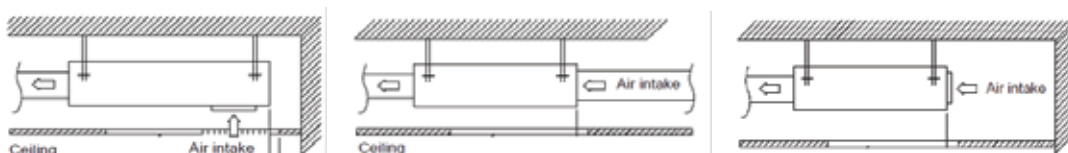


Long life filter included



Installation is flexible by changing from the back to the under air intake. Suction board cover can be fixed either at the bottom or the back of unit.

Various installation options for air suction



Compact sizing

Compact size especially in height (275mm* and 298mm**) offers a wide range of installation options for the customer.



Flexible ducting

- Design flexibility
- Max. 180Pa with DC motor

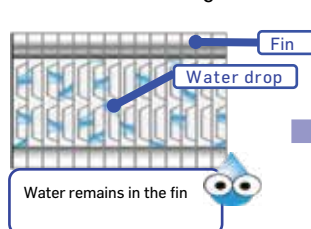
Flexible Installation

- Back or under air intake
- High-lift drain pump (850 mm. from the bottom side)

Self clean operation

Automatic washing of the aquaresin coated indoor unit fins using condensate water ensures prevention of dust accumulation and the spread of mold.

General heat exchanger



Dust stick



Mold spread

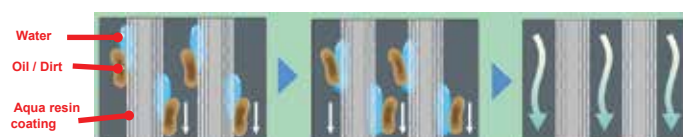


Dust accumulates after a long-time operation !

Aqua resin coated Magic coil in FCU

The aqua resin coating prevents dirt from sticking to the fins. Condensation water flow washes away dirt. After washing, a drying operation suppresses the propagation of mold.

Magic Coil heat exchanger



*Size 18,24,30 **Size 36,48



Built-in high-lift drain pump

The flexible piping layout is made possible by a drain-pump kit that raises the drain piping up to 850mm. The drain-pump kit is standard for size 18-48 (size 60 is optional)



High static pressure

External static pressure can be raised as high as 180Pa, so that all areas of the room can be covered for an even temperature distribution, irrespective of the layout complexity.

Remote Control



RBC-AMS41E-ME

Standard duct

Specifications

Model		Indoor unit		RAV-SH1801BP-AE	RAV-SH2401BP-AE	RAV-SH3001BP-AE	RAV-SH3601BP-AE	RAV-SH4801BP-AE	RAV-SH6001BP-AE1
		Outdoor unit		RAV-SHB1801AP-AE	RAV-SHB2401AP-AE	RAV-SHB3001AP-AE	RAV-SHB3601AP-AE	RAV-SHB4801A8P-AE	RAV-SHB6001A8P-AE
Power supply				1 phase 220V-240V 50Hz				3Phase 380-415V 50Hz	
Cooling capacity	T1	Capacity	(kW)	5.3 < 1.6 - 6.0 >	6.6 < 2.0 - 8.0 >	8.8 < 3.0 - 10.0 >	10.1 < 3.0 - 11.2 >	12.5 < 4.0 - 15.9 >	14.20 < 5.0 - 19.0 >
		Power consumption	(kW)	1.48	1.91	2.48	2.92	3.62	3.94
		EER	(Btu/h.W)	12.30	11.80	12.10	11.80	11.80	12.30
	T3	Capacity	(kW)	4.50	5.61	7.50	8.60	11.00	12.60
		Power consumption	(kW)	1.85	2.31	3.09	3.52	4.51	4.51
		EER	(Btu/h.W)	8.30	8.30	8.30	8.30	8.30	9.55
Indoor unit specifications									
Outer dimension	Main unit	Height	(mm)	275	275	275	298	298	448
		Width	(mm)	1000	1000	1400	1400	1400	1400
		Depth	(mm)	750	750	750	750	750	900
Total weight	Main unit	(kg)	30.0	30.0	40.0	42.0	42.0	97.0	
Fan				Centrifugal fan					
Standard air flow	H/M/L	(m³/h)	1500 / 1200 / 800	1500 / 1350 / 900	2000 / 1700 / 1200	2300 / 2000 / 1400	3000 / 2700 / 1560	3600 / 3240 / 2500	
Sound pressure level	H/M/L	(dB)	41 / 38 / 33	41 / 39 / 36	42 / 41 / 38	44 / 43 / 39	53 / 50 / 41	44 / 40 / 36	
External static pressure	Standard (Upper - Lower)	(Pa)	30 (120-30)	30 (120-30)	50 (160-30)	50 (180-30)	50 (180-30)	50 (180-30)	
Indoor filter			Yes				TCB-LK1401D-E	TCB-LK1401D-E	TCB-LK2801DP-E
Outdoor unit specifications									
Heat Exchanger			Cu-Al						
Outer dimension	Height	(mm)	550	630	890	890	1340	1340	
	Width	(mm)	780	800	900	900	900	900	
	Depth	(mm)	290	300	320	320	320	320	
Total weight	Main unit	(kg)	41.0	46.0	69.0	71.0	102.0	103.0	
Pipe	Min. length	(m)	5	5	5	5	5	5	
	Max. total length	(m)	35	35	35	35	50	50	
Flare Connections	Gas side	(mm)	12.7	15.9	15.9	15.9	15.9	19.0	
	Liquid side	(mm)	6.4	9.5	9.5	9.5	9.5	9.5	
Refrigerant			R410A						
Sound pressure level	Cooling	(dB)	47	52	54	57	63	63	
Operating Range	Cooling	(°C)	21 - 54						

T1 Rated conditions Cooling: Indoor air temperature @ 27°C DB / 19°C WB and outdoor air temperature @ 35°C DB

T3 Rated conditions Cooling: Indoor air temperature @ 29°C DB / 19°C WB and outdoor air temperature @ 46°C DB



4-way cassette

RAV-SH****UP



RBC-U31PGXP(W)-IN1



> Features

Efficiency

The Toshiba 4-way inverter cassette incorporates several energy saving technologies to improve operational efficiency and cost savings.

Magic coil

Maintains efficient heat transfer rate and energy saving by flushing oil and dirt with condensation water.

Long slit of heat exchanger

Improves heat transfer rate by mixing airflow more effectively.



High efficient DC Fan motor

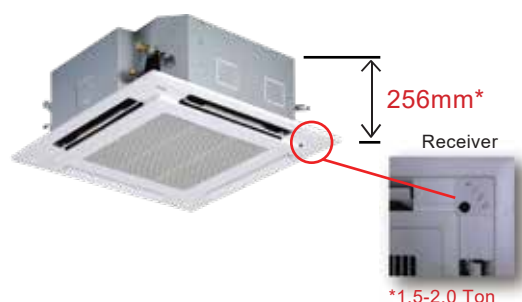
Optimizes DC Fan motor for fan and heat exchanger.

Large opening of AC vent

Enlarging the AC vent to reduce the noise caused by large air volume.

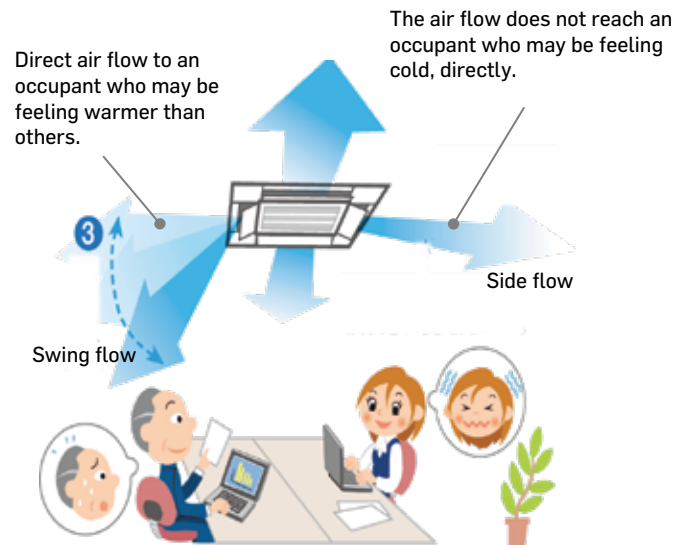
Compact sizing

Compact size, specially height (256mm) offer wide installation flexibility to the customer.



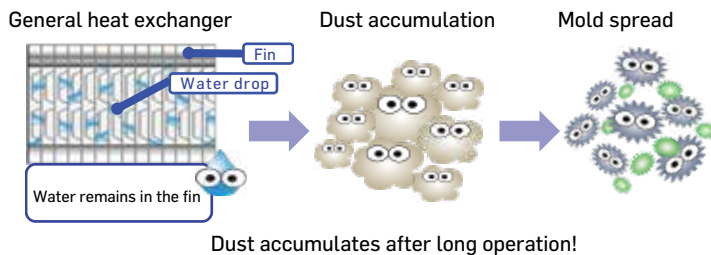
Comfort

Each louver can be controlled individually ensuring accuracy in directional control of airflow.



Self clean operation

Automatic washing of the aquaresin coated indoor unit fins using condensate water.

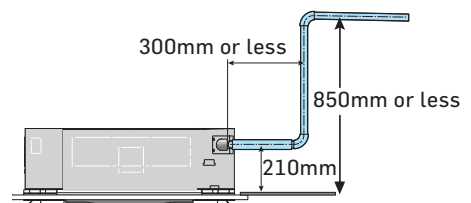


Fireproof electrical enclosure

Fully fireproof electrical enclosure for both indoor and outdoor units ensures safety by preventing fire spread, explosions and fire-burn.

850mm drain pump

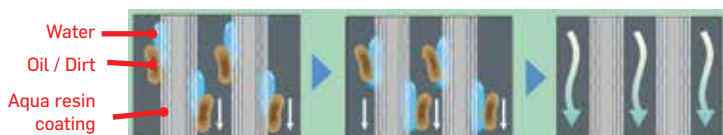
Drain can be discharged upwards to 850mm. This ensures a high degree of freedom in the piping layout.



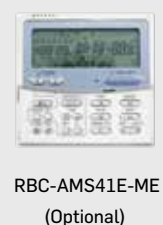
Magic coil in FCU by Aqua resin coated

Automatic washing of the aqua resin coated indoor unit fins using condensate water ensures prevention of dust accumulation and the spread of mold. After washing, a drying operation suppresses mold build-up.

Magic Coil heat exchanger



Remote Control



4-Way Cassette

Specifications

Model			Indoor unit		RAV-SH1801UP-AE	RAV-SH2401UP-AE	RAV-SH3001UP-AE	RAV-SH3601UP-AE	RAV-SH4801UP-AE	
			Outdoor unit		RAV-SHU1801AP-AE	RAV-SHU2401AP-AE	RAV-SHU3001AP-AE	RAV-SHU3601AP-AE	RAV-SHU4801A8P-AE	
Power supply					1 phase 220V-240V/50Hz, 1phase 220V/60Hz					3Phase 380-415V 50Hz, 380-400V 60Hz
Cooling capacity	T1	Capacity	(kW)	5.3 < 1.6 - 6.0 >	7.1 < 2.0 - 8.0 >	8.8 < 3.0 - 10.0 >	10.6 < 3.0 - 11.2 >	12.5 < 4.0 - 15.9 >		
		Power consumption	(kW)	1.49	2.06	2.45	2.97	3.62		
		EER	(Btu/h.W)	12.20	11.80	12.25	12.20	11.8		
	T3	Capacity	(kW)	4.50	6.06	7.50	9.10	11.00		
		Power consumption	(kW)	1.85	2.49	3.09	3.74	4.51		
		EER	(Btu/h.W)	8.30	8.30	8.30	8.30	8.30		
Indoor unit specifications										
Outer dimension	Main unit	Height	(mm)	256	256	319	319	319		
		Width	(mm)	840	840	840	840	840		
		Depth	(mm)	840	840	840	840	840		
	Ceiling panel (Sold separately)	Height	(mm)	30	30	30	30	30		
		Width	(mm)	950	950	950	950	950		
		Depth	(mm)	950	950	950	950	950		
Ceiling panel (Sold separately)				Model : RBC-U31PGXP(W)-IN1						
Total weight	Main unit	(kg)	20.0			24.0				
	Ceiling panel (Sold separately)	(kg)	4.2							
Fan				Turbo fan						
Standard air flow	H/M/L	(m3/h)	1050 / 870 / 780	1230 / 960 / 810	2100 / 1440 / 1170	2150 / 1500 / 1260	2300 / 1840 / 1500			
Sound pressure level	H/M/L	(dB)	37 / 36 / 34	40 / 37 / 36	46 / 42 / 37	47 / 43 / 39	49 / 45 / 43			
Outdoor unit specifications										
Heat Exchanger				Cu-Al						
Outer dimension	Height	(mm)	550	630	890	890	1340			
	Width	(mm)	780	800	900	900	900			
	Depth	(mm)	290	300	320	320	320			
Total weight	Main unit	(kg)	41.0	46.0	69.0	71.0	102.0			
Pipe	Min. length	(m)	5	5	5	5	5			
	Max. total length	(m)	35	35	35	35	50			
Flare Connections	Gas side	(mm)	12.7	15.9	15.9	15.9	15.9			
	Liquid side	(mm)	6.4	9.5	9.5	9.5	9.5			
Refrigerant			R410A							
Sound pressure level	Cooling	(dB)	47	52	54	57	63			
Operating Range	Cooling	(°C)	21 / 54							






T1 Rated conditions Cooling: Indoor air temperature @ 27°C DB / 19°C WB and outdoor air temperature @ 35°C DB

T3 Rated conditions Cooling: Indoor air temperature @ 29°C DB / 19°C WB and outdoor air temperature @ 46°C DB



CONTROLS

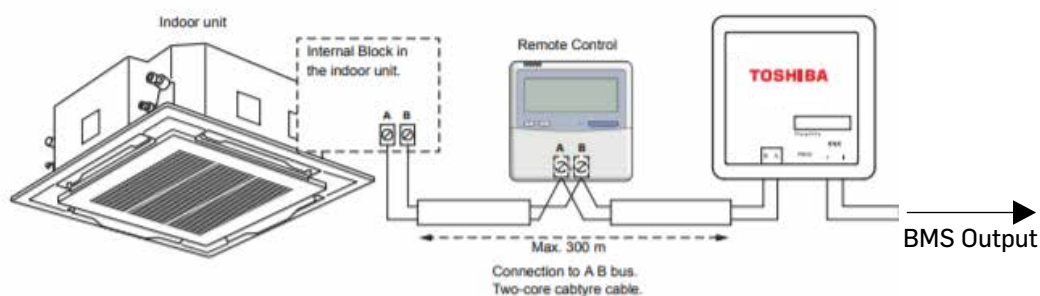
Optional Accessories

Connector No	Picture	Pin No	Specification	Application	RAV-SH***BP	RAV-SH***UP
TCB-KBCN32VEE		1	DC12 V	External Ventilation Fan Controls	YES	YES
		2	Output			
TCB-KBCN61HAE		1	Start / stop input	1. Hotel Key Card 2. Fire Panel Interlock 3. BMS/DDC/PLC Interlock - ON-OFF Command (Dry Contact) - RUN Output (12VDC) - Alarm Output (12VDC)	YES	YES
		2	0V(COM)			
		3	Prohibition Input			
		4	Operation output			
		5	DC12 V (COM)			
		6	Alarm output			
TCB-KBCN600PE		1	DC12 V (COM)	BMS/DDC/PLC Interlock 1. Defrosting output (12VDC) 2. Thermostat ON output (12VDC) 3. Cooling output (12VDC) 4. Heating Output (12VDC) 5. Fan Output (12VDC)	YES	NO
		2	Defrosting output			
		3	Thermostat ON output			
		4	Cooling output			
		5	Heating output			
		6	Fan output			
TCB-PCUC2E		IN1	External Error Input	BMS/DDC/PLC Interlock	NO	YES
		IN2	Prohibition Input			
		AI1	Operation Input resistance			
		AI2	Setpoint input resistance			
		AI3	Fan speed Input resistance			
		K1	Configurable Output 1			
		K2	Configurable Output 2			
		K3	Configurable Output 3			
TCB-PCNT30TLE2			TCC-Link	TCB-PCNT30TLE TCC-Link network adaptor enables RAV systems to interface with central controllers and BMS systems.	YES	YES

Optional BMS Interface

LC Indoor units can be integrated with Building Management Systems using Optional BMS Interface.

1. BMS-IFMB0TLR-E - Modbus RTU (1:1) BMS Interface
2. BMS-IFKX0TLR-E KNX TP (1:1) BMS Interface



NOTES

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