Air Conditioning 2011/2012

eco ideas | INVERTER | ECONAVI | ADVANCED+PLUS e-ion Air Purifying System with Patrol Sensor

BUILT-IN GENIUS | Panasonic

ECO INTELLIGENCE
by design

Yet another Global Eco Standard Innovation by Panasonic

Going green by saving energy shouldn't compromise on your comfortable lifestyle. That's why the inverter was first introduced in our air conditioners, which have exceptional energy-saving performance. At the same time, you also get to enjoy Advanced+Plus e-ion Air Purifying System with Patrol Sensor for cleaner air. Both advanced features are designed to improve your quality of life.

With the same concern in mind, Panasonic introduces our new ECONAVI concept - an intelligent eco sensor that can detect and further reduce wasted energy. This empowers you to save energy easily and contribute to the environment. Imagine what millions of people around the world can change with ECONAVI. A more sustainable future is possible.

ECONAVI

* ECONAVI is applicable only to Inverter Deluxe Reverse Cycle models.

ECONAVI

Responds intuitively to changing room conditions and reduces energy wastage, resulting in real savings.

INVERTER

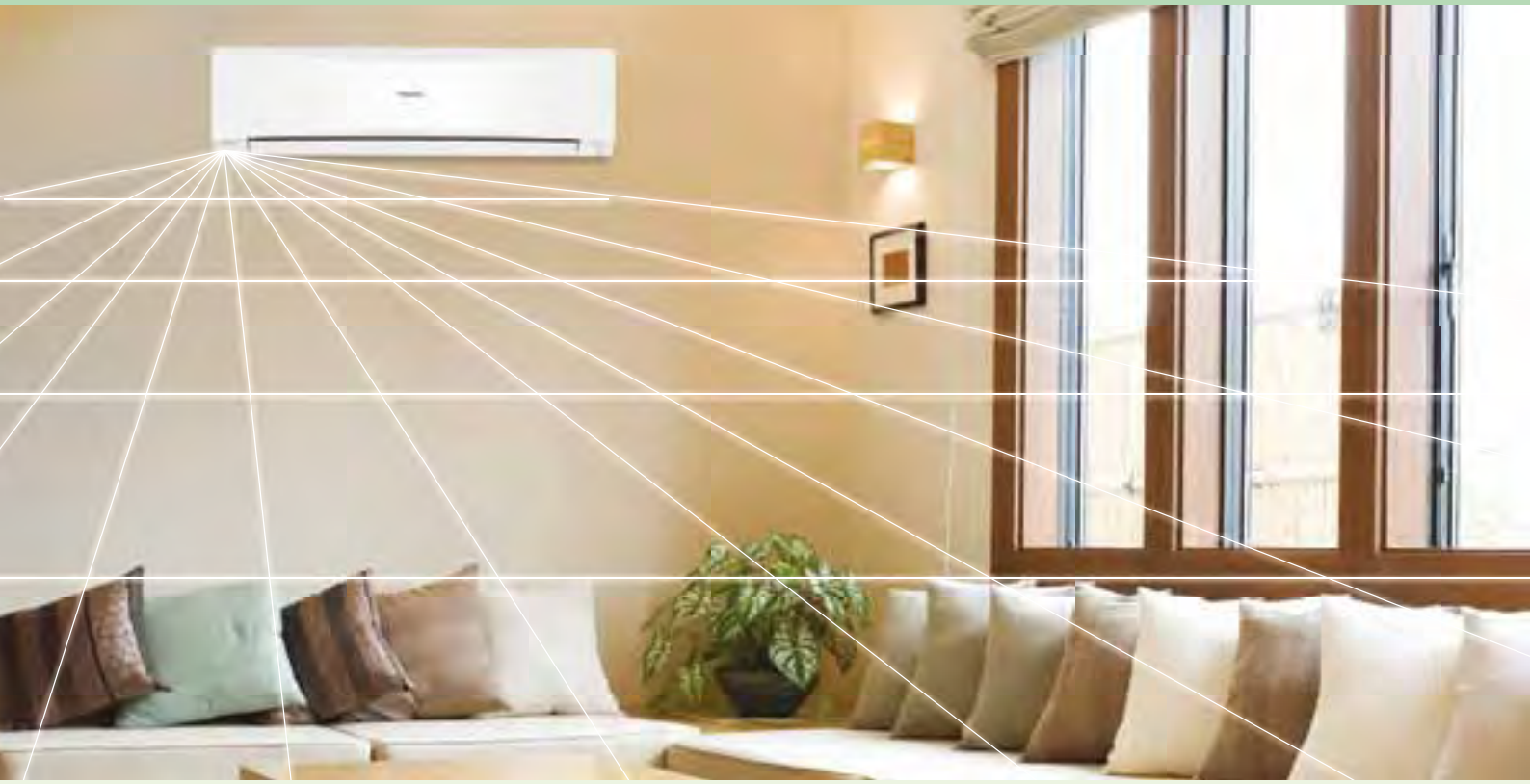
Self-adjusts compressor's rotational speed to deliver cost-efficient, energy-saving, comfortable and quiet performance at all times.

ADVANCED⁺PLUS

e-ion Air Purifying System with Patrol Sensor

Automatically detects changes in the degree of air cleanliness and activates the air purifying function for cleaner and healthier air.

Introducing ECONAVI
– it saves energy by REDUCING WASTE



Panasonic's ECONAVI concept applies high precision Sensors and Control Program technologies to optimise air conditioner operation according to room conditions. How does it save energy? By utilising these technologies to detect where energy is normally wasted and self-adjusts cooling/heating power. ECONAVI helps you to save energy efficiently with uninterrupted cooling/heating, comfort and convenience.

ECONAVI provides up to 30%* energy-savings in cooling mode, and up to 40%*1 energy-savings in heating mode.

One-touch ECONAVI reduces waste in three simple steps:

EXAMINE
- Level of activity.
- Human presence.

EVALUATE
- Changes in human location.
- Changes in human activity.
- Changes in human presence.

EXECUTE
- Adjusts airflow direction.
- Low activity: Auto decrease output.
- Absence: Gradually decrease output.

UP To 30%* ENERGY SAVINGS

Comparison of 3.5kW Inverter model with ECONAVI ON and OFF (Cooling)
ECONAVI ON Outside temperature: 35ºC/24ºC
Remote setting temperature: 25ºC with Fan Speed (High)
Vertical Airflow direction: Auto, Horizontal Airflow direction: ECONAVI Mode
Setting temperature goes up 1ºC controlled by ECONAVI activity level

ECONAVI OFF Outside temperature: 35ºC/24ºC
Remote setting temperature: 25ºC with Fan Speed (High)
Vertical Airflow direction: Auto, Horizontal Airflow direction: Front
Total power consumption amount are measured for 1 hour in stable condition.
At Panasonic Amenity Room (size:16.2m^2)

This is the maximum energy saving value, and the effect differs according to conditions in installation and usage.

***1 Up to 40% Energy-Savings**
Comparison of 3.5kW Inverter model with ECONAVI ON and OFF (Heating)
ECONAVI ON Outside temperature: 7ºC/6ºC, Remote setting temperature: 23ºC with Fan Speed (High)
Vertical Airflow direction: Auto, Horizontal Airflow direction: ECONAVI Mode, Setting temperature goes down 2ºC controlled by ECONAVI activity level

ECONAVI OFF Outside temperature: 7ºC/6ºC, Remote setting temperature: 23ºC with Fan Speed (High)
Vertical Airflow direction: Auto, Horizontal Airflow direction: Front, Total power consumption amount are measured for 1 hour in stable condition. At Panasonic Amenity Room (size:16.2m²)

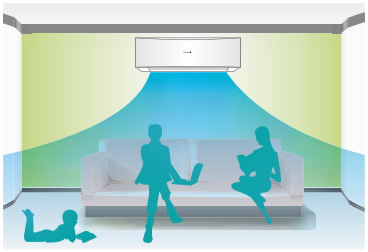
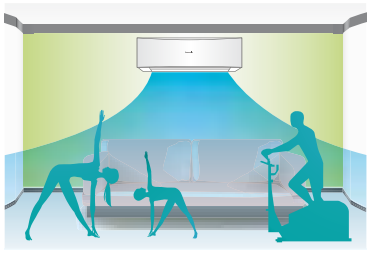
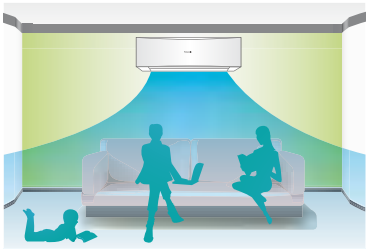
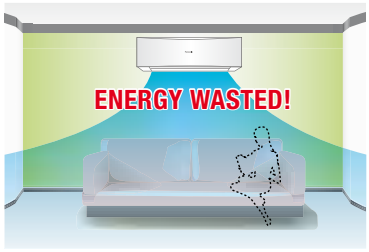
This is the maximum energy saving value, and the effect differs according to conditions in installation and usage.

How ECONAVI Works

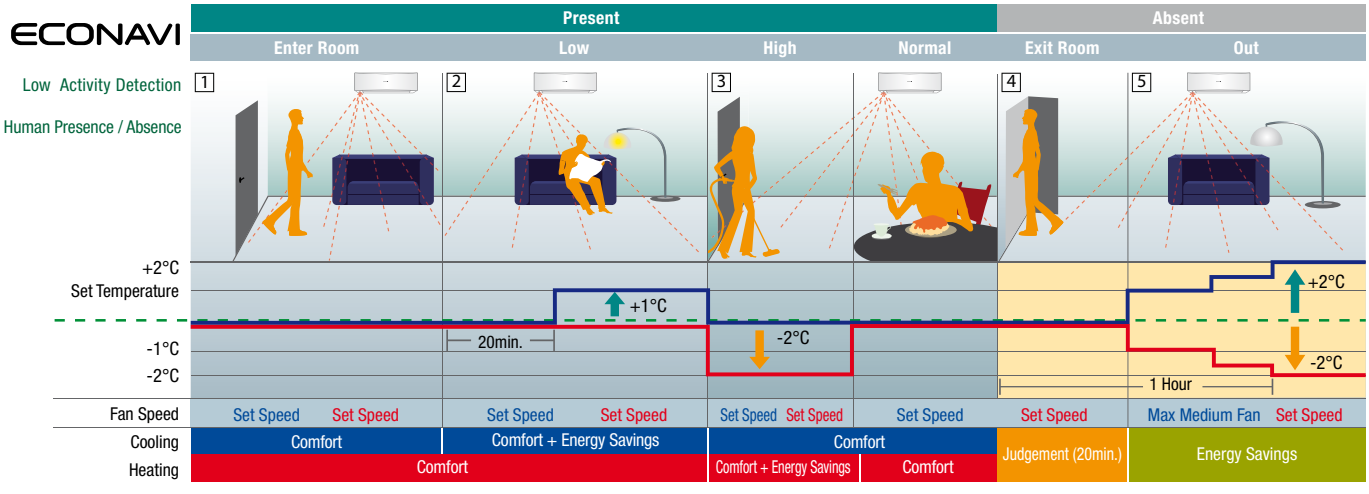
When saving energy is your main concern, press the ECONAVI button. Conventional air conditioners are not equipped with sensor and control technologies for maximum energy savings, resulting in energy wastage. ECONAVI's ability to Examine, Evaluate and Execute can help you reduce waste based on three factors:

AREA SEARCH + LOW ACTIVITY DETECTION + ABSENCE DETECTION

These three factors can be explained in the following scenarios:

	EXAMINE Scenario	EVALUATE Change Detected	EXECUTE ECONAVI Operation
AREA SEARCH			
	There are three people in the room.	Only one person remains. Detects wasted cooling area. Conventional air conditioners cannot detect the change in human activity and adjust the temperature.	Airflow direction is adjusted.
LOW ACTIVITY DETECTION			
	The people in the room are active.	Level of activity is DECREASED. Detects LOW activity. Conventional air conditioners cannot detect the change in human activity and adjust the temperature.	Air conditioner automatically decreases output power.
ABSENCE DETECTION			
	There are people in the room.	People leave the room. Detects human ABSENCE. Conventional air conditioners cannot detect the change in human presence and adjust the temperature.	Air Conditioner gradually decreases output power.

Air Conditioner Settings when ECONAVI is Activated:



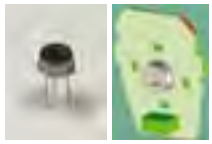
ECONAVI is only applicable to Inverter Deluxe Reverse Cycle models.

ECONAVI is only applicable to Inverter Deluxe Reverse Cycle models.

Sensor Structure

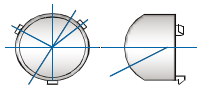
An infrared sensor detects people's movements. When an object with a temperature that is different from the ambient temperature moves inside the detection area, the sensor detects the resulting change.

High Precision Sensor



This high precision sensor analyses and judges room conditions.

Fresnel Lens



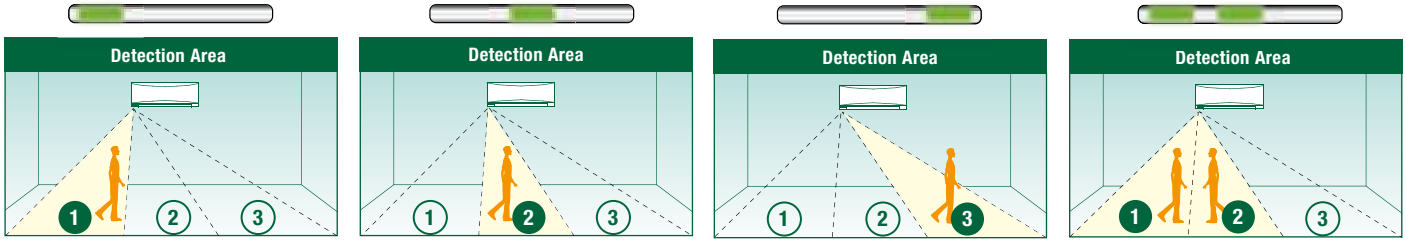
This optimal design ensures the sensor can see the entire room.

Sensor Detection Principle

Dual human activity sensor detects human activity level and directs airflow to occupied or high activity zone.

LEDs Operation Indication Status

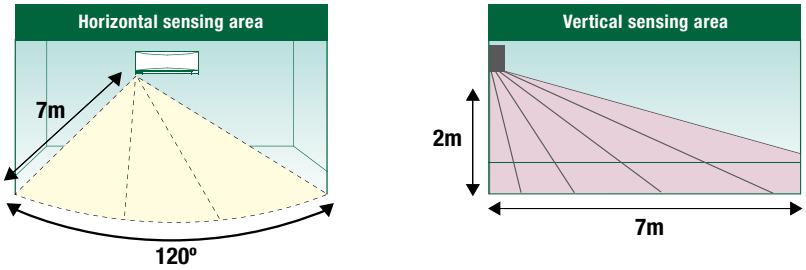
LED indicators indicating ECONAVI is detecting and functioning.



Coverage Capabilities

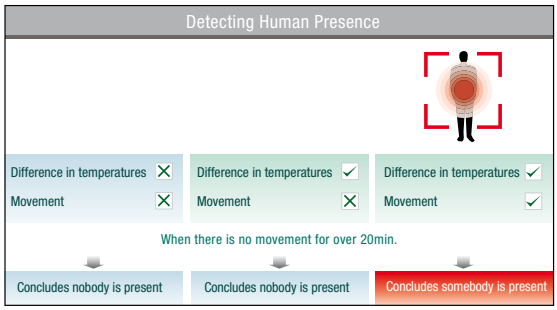
ECONAVI covers a wider area due to its improved area detection function.

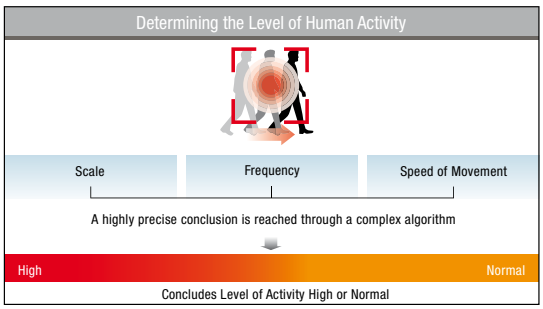
The entire room is divided into 3 detection areas



High-Precision Sensing

All objects emit infrared rays which, although invisible, can be detected as heat by ECONAVI's sensor if it is within the detection zone. When an object moves within its detection zone, ECONAVI compares the object's temperature with the room temperature to determine if it is human, and level of activity based on its movement.





Differentiating Objects

ECONAVI's sensor technology uses factors such as speed, frequency and temperature of every object to determine if it is human.

Electrical products

Difference in temperatures ✓
+
Movement ✗
Concludes it is not human

Small insects

Difference in temperatures ✓
+
Movement ✓
Concludes it is not human

Both changes may be detected, but they are too small to have any effect on the sensor.

A rolling ball

Difference in temperatures ✗
+
Movement ✓
Concludes it is not human

Pets

Difference in temperatures ✓
+
Movement ✓
Possibility to conclude it is human*

From the difference in temperatures and the nature of the object's movement, ECONAVI can determine if it's human*.

* The sensor may deem pets as humans, unless it moves within the detection zone at speeds that are not humanly possible.

Introducing AUTOCOMFORT – it PROVIDES COMFORT and SAVES ENERGY.

AUTOCOMFORT

AUTOCOMFORT is another new feature designed to keep you comfortable and also save you energy. With one touch of a button, the air conditioner detects room conditions to optimise cooling/heating comfort, and energy-saving operations.

How AUTOCOMFORT Works

When comfort is your priority and energy-saving is your concern, press the AUTOCOMFORT button. AUTOCOMFORT Examines, Evaluates and Executes based on the same 3 key factors* as ECONAVI and looks after your comfort with an additional factor, High Activity Detection.

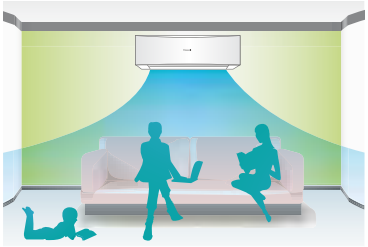
*AREA SEARCH + *LOW ACTIVITY DETECTION + *ABSENCE DETECTION + HIGH ACTIVITY DETECTION

How High Activity Detection Works

In AUTOCOMFORT mode, a fourth factor is used to deliver comfort. High Activity Detection detects when the level of activity increases, and automatically increases cooling power to maintain comfort. This factor is explained in the following scenario:

HIGH ACTIVITY DETECTION

EXAMINE
Scenario

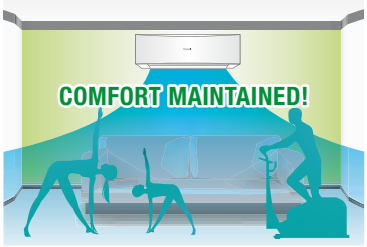


People in the room are relaxed.

EVALUATE
Change Detected

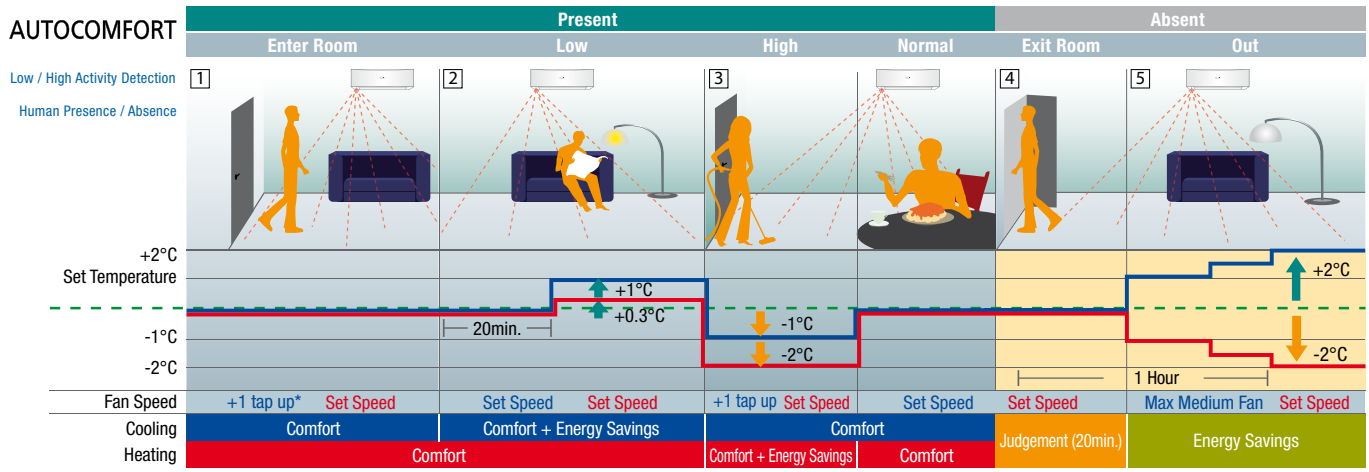
Level of activity is INCREASED. Detects HIGH activity. Conventional air conditioners cannot detect the change in human activity and adjust the temperature.

EXECUTE
AUTOCOMFORT Operation



Air Conditioner automatically increases output power.

Air Conditioner Settings when AUTOCOMFORT is Activated:



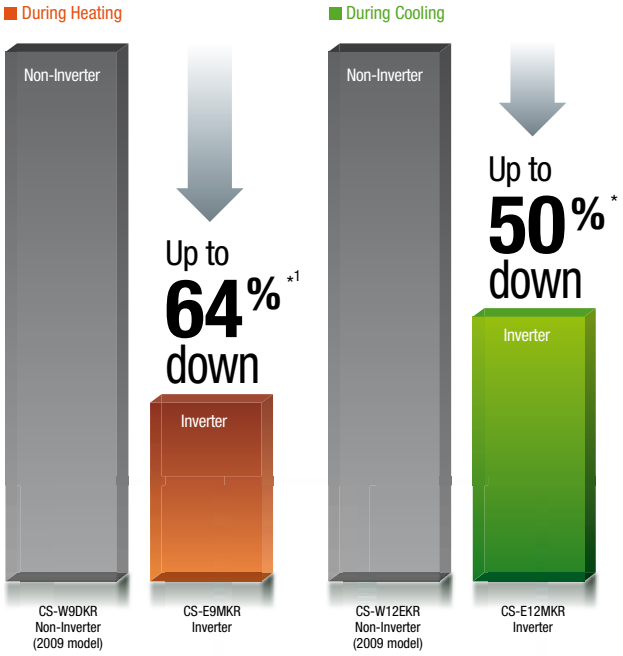
*Conditions to change back to set fan speed: 1) Set temperature is achieved. 2) 15 minutes after entering the room.
ECONAVI is only applicable to Inverter Deluxe Reverse Cycle models.

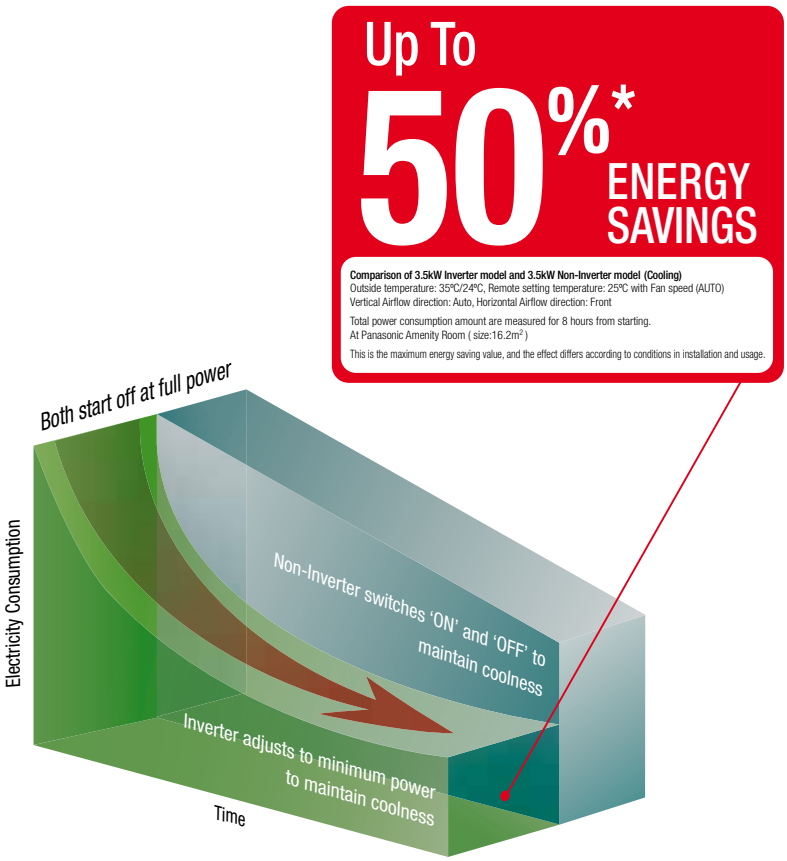
Cooling Heating

Outstanding Performance and Energy Savings

The exceptional energy-saving performance of Panasonic Intelligent Inverter air conditioners ranks among the highest in the industry. The secret lies in its precision control. After reaching the set temperature, an Intelligent Inverter air conditioner continually adjusts compressor rotation speed to operate with minimum power – giving you up to 50%* energy savings during cooling operation, and 64%*1 energy savings during heating operation. By contrast, a non-Inverter unit operates on an ON-OFF cycle to maintain the temperature – so it uses twice as much electricity.

eco ideas





*1 Comparison of Inverter model and Non-Inverter model (Heating), Outside temperature: 2°C/1°C, Remote setting temperature: 25°C with Fan speed (High)/ Vertical Airflow direction: Auto, Horizontal Airflow direction: Front

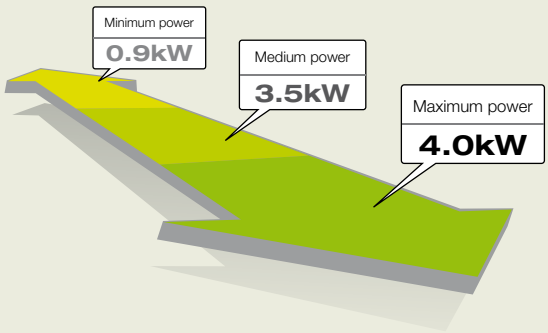
Total power consumption amount are measured from the start of operation until it reaches to the set temperature.
At Panasonic Amenity Room (size: 16.2m²)

This is the maximum energy saving value, and the effect differs according to conditions in installation and usage.

Optimum Performance

Thanks to a wider power output range, the Intelligent Inverter can vary its cooling power to meet different room occupancy levels. By adjusting the compressor's rotation performance to provide optimum speed at all times, it is able to cool more quickly and maintain the set temperature more cost-efficiently than a non-Inverter.

Even Wider Output Power Range

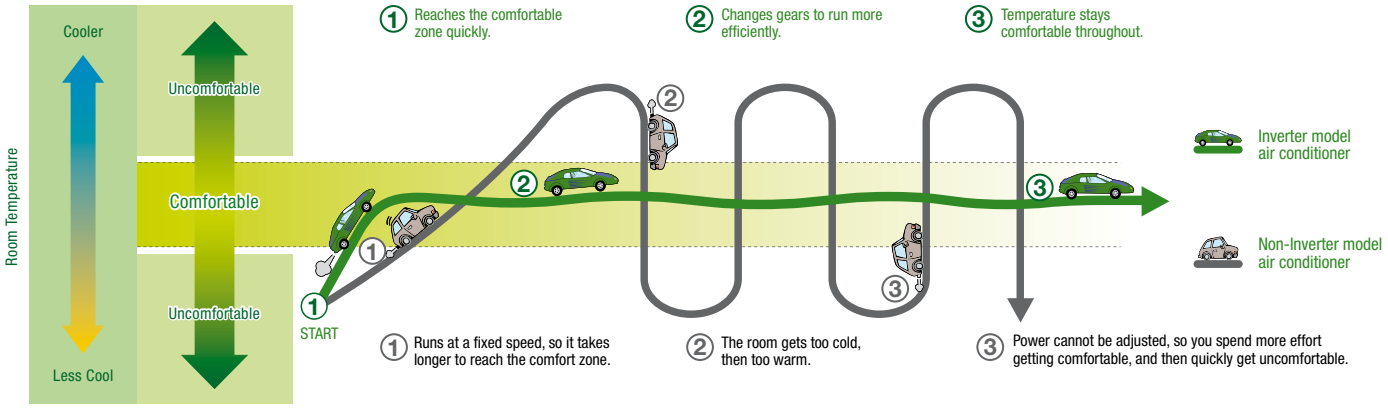


Graph shows the CS-E12MKR Inverter model's wide power output range during cooling

More Precise Temperature Control

An Intelligent Inverter air conditioner varies its power output to mantain the temperature more precisely. By contrast, a non-Inverter model maintains the temperature by switching the compressor ON and OFF – more electricity is used and cooling is uneven!

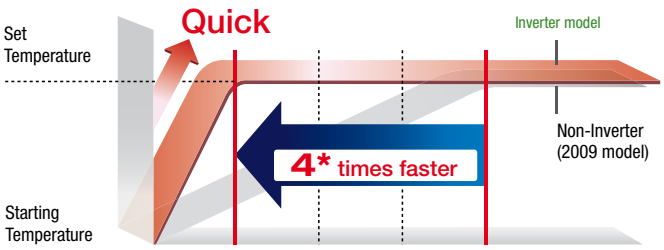
Performance Comparison Using Cars as an Analogy



Quick Comfort

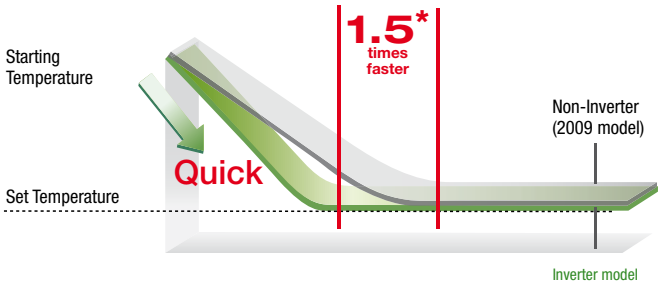
As soon as an Intelligent Inverter air conditioner is switched on, it provides the exact amount of power needed to rapidly cool or heat the room. This enables it to heat a room 4 times faster, and cool a room 1.5 times faster, than non-inverter models. So you're comfortable soon after you arrive home on a hot summer day, or on a cold winter morning.

Comparison of Heating Speed



* Comparison of 2.6kW Inverter and Non-Inverter.
Outside room temperature: 2˚C ; Setting temperature: 25˚C

Comparison of Cooling Speed



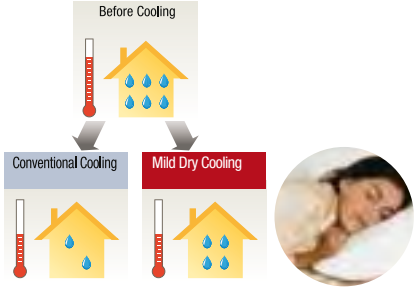
* Comparison of 3.5kW Inverter and Non-Inverter.
Outside room temperature: 35˚C ; Setting temperature: 25˚C

Mild Dry Cooling

Based on findings from the Skin Moisture Decrease Test, Professor Norio Isoda from Nara Women's University concluded that a high humidity environment improves skin moisture compared to a low humidity environment (with a difference in humidity of 10% or more). Precise temperature control helps prevent a rapid decrease in room humidity while maintaining the set temperature, which maintains a relative humidity up to 10% higher than regular cooling operations. Mild Dry Cooling can help to minimise dry skin and dry throat – common effects of regular cooling operation.

Ideal when sleeping with the air conditioner on.

The effect was verified by Norio Isoda, a professor emeritus from Nara Women's University (Sep 2008)



Lowers room temperature while maintaining high humidity

Air Purifying Technology

ADVANCED + PLUS

e-ion Air Purifying System with Patrol Sensor

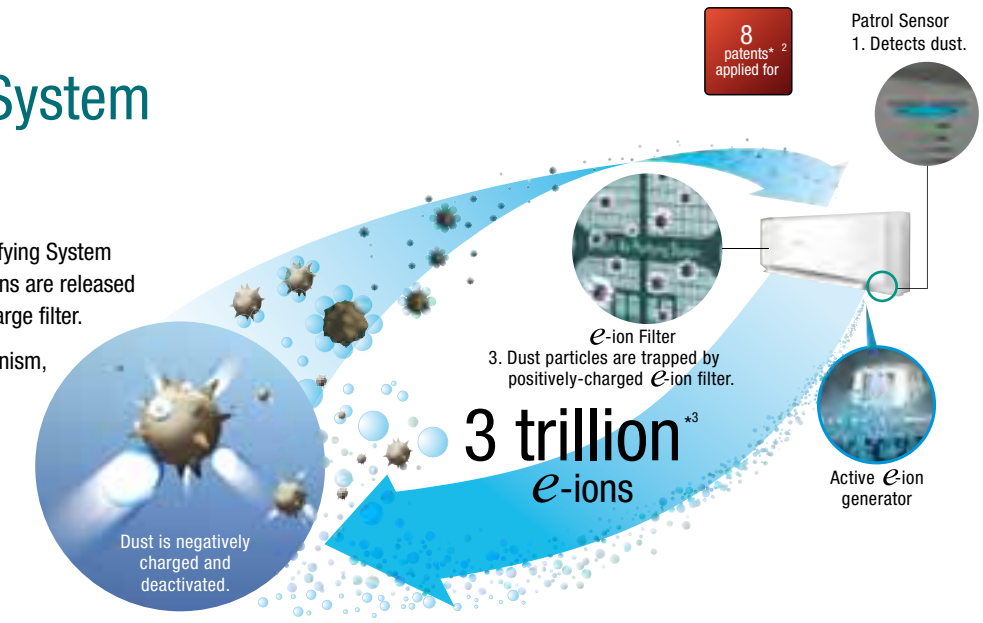
Panasonic's original, highly acclaimed e-ion Air Purifying System is now 15%[*1] more efficient than before. Active e-ions are released to catch dust particles and bring them back to the large filter.

Thanks to this revolutionary boomerang-like mechanism, air is purified throughout the room to provide a healthy, relaxing living environment.

[*1] Compared to 2007 year's models.

[*2] Panasonic has applied for 8 patents related to e-ion Air Purifying technology. (As of May, 2010)

[*3] 3 trillion is the simulated number of active e-ions under the mentioned conditions. Actual measured active e-ions at the centre of the room (13m^2):100k/cc calculated number of active e-ions in the entire room assuming they are evenly distributed.

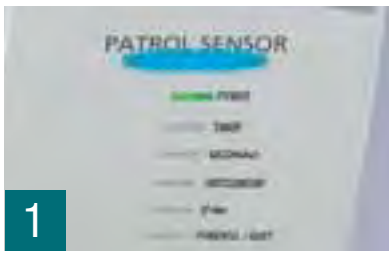


2. E-ions catch and deactivate micro-organisms. Dust particles become negatively-charged.

Applicable models: Inverter Deluxe Reverse Cycle models

THIS IS PANASONIC'S REVOLUTIONARY MECHANISM

Air is monitored both during air conditioner operation and when it's switched off. When dirt is detected, the air purifying function is started to immediately clean the air in the room.



DETECTS

PATROL SENSOR

The sensor measures the dirt in the air, and above a certain level the air is judged to be dirty.

If dirt concentration exceeds the sensing level, the Air Purifying System is switched on.

CATCHES & DEACTIVATES

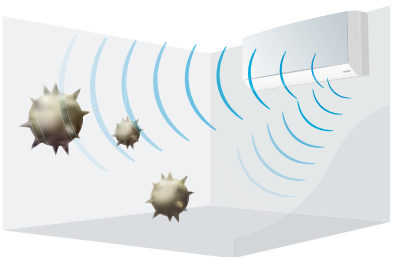
E-ION ACTION

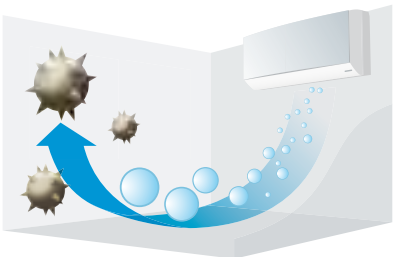
Three trillion e-ions are released to catch floating dust particles. The ions also deactivate bacteria and viruses.

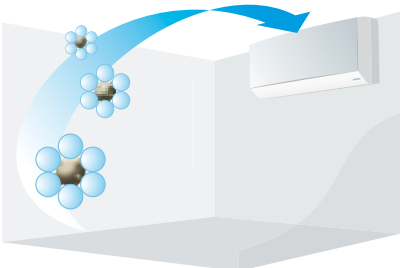
CAPTURES ELECTRICALLY

E-ION FILTER

The filter is positively-charged, so negatively-charged dust particles are electrically attracted. This electrical action assures that dust is efficiently captured.



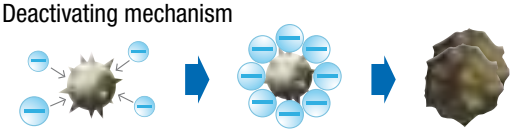




Active e-ion

- Active e-ions can deactivate airborne micro-organisms.
- The e-ion air purifying system can rapidly redue airborne mould and bacteria*1.

Deactivating mechanism



Active e-ions stick to the surface of the bacteria. | OH radicals work on the cell wall. | The bacteria is deactivated.

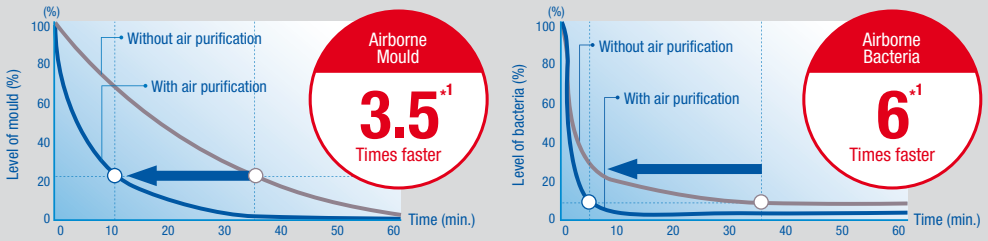
The same applies to viruses

Deactivation was certified by Japan Food Research Laboratories

- Test report number: No. 10057764001-02
  Bacteria: Staphylococcus aureus subsp. aureus (NBRC12732)
- Test report number: No. 10057770001-02
  Bacteria: Escherichia coli (NBRC3972)
- Test report number: No. 204101750-001
  Virus: Influenza virus A

*1 Test report number: No. 304110078-001
Test method: The e-ion Air Purifying System was operated in a test room (10m³) and changes in airborne mould and bacteria were measured by means of the Air Sampler Method (MAS100)

Removal performance

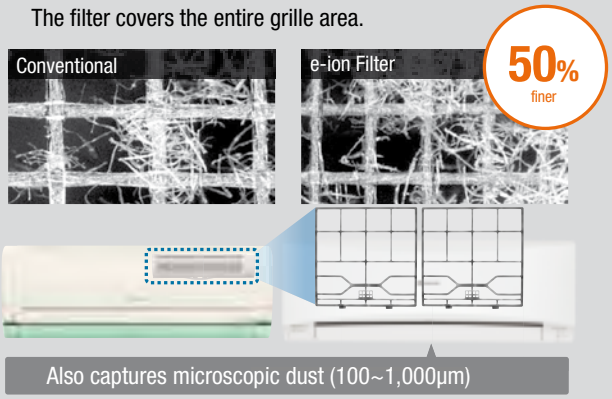


e-ion Filter

Using the force of attraction between positive and negative charges, the e-ion Filter – which is 7 times bigger and finer than ever – powerfully captures airborne dust particles.

Bigger Size, Finer Mesh

The filter covers the entire grille area.



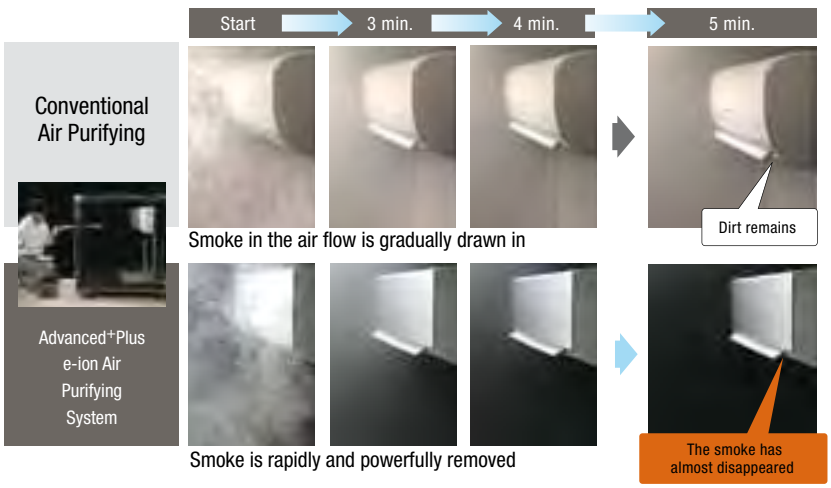
Electric Charging

Electric Induction Fibres extend across the entire area of the filter for charging.

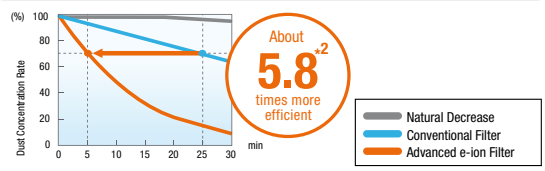
1. Active e-ion Power Module
2. Positive Charging Electric Wire
3. Electric Induction Fibres positively charge the entire filter

Electric Dust Collection for More Efficient Purification

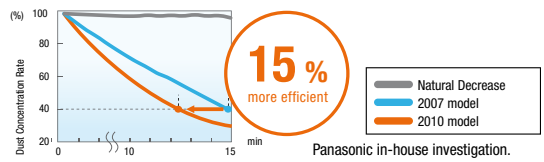
A smoke collection test demonstrates the exceptional purifying performance.



Comparison with Conventional Filter



Comparison with Conventional e-ion Air Purifying System

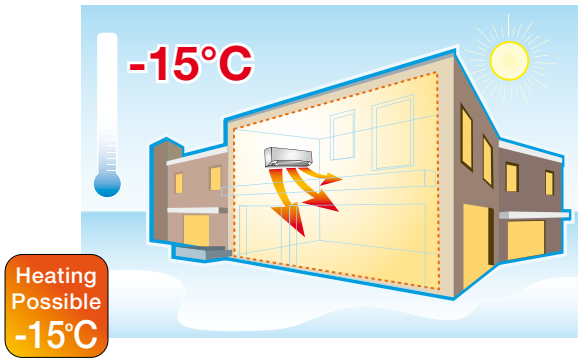


Panasonic in-house investigation.

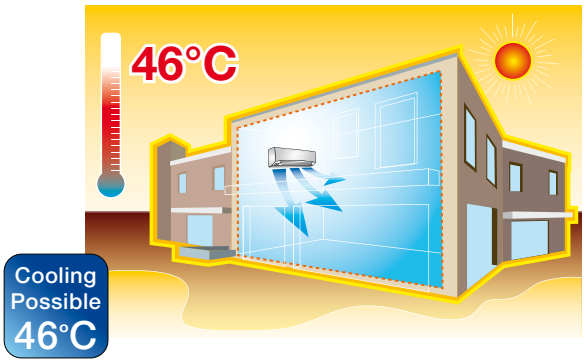
*2 After 5 cigarettes were smoked in a roughly 20m³ room, air conditioner operation was started and the decrease in particulate concentration was measured with a dust meter.

Wide Operating Temperature Range

Panasonic Air Conditioners are perfectly designed to suit Australia's climate with outstanding operating temperature range.



Providing outstanding cold climate performance, Panasonic Air Conditioners let you enjoy stable heating even when the outside temperature is below freezing. Units operate down to -15°C. Add to this exceptional durability and reliability and you are looking at worry-free operation for comfort during winter.

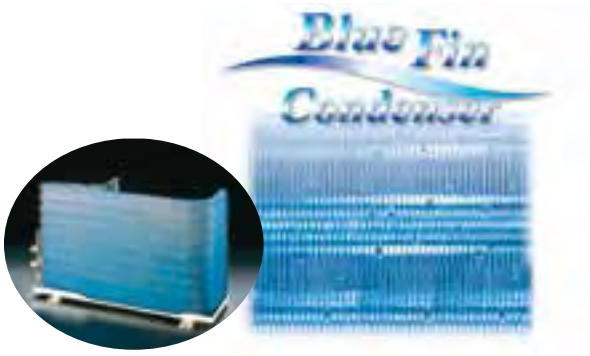


Cooling is possible even when the outside temperature is up to 46°C. The highly durable compressors and fan motors found inside Panasonic Air Conditioners help to maintain room comfort even under the hottest conditions.

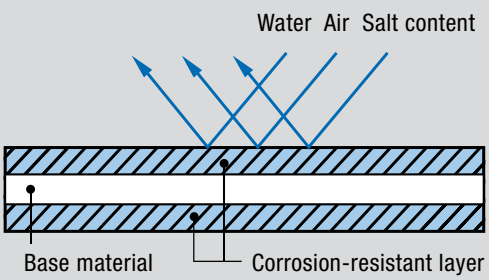
Blue Fin Condenser

Lasts 3 Times Longer

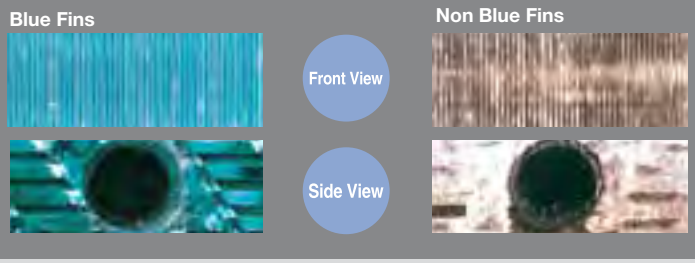
An air conditioner's performance depends largely on its condenser, which can take a beating from exposure to salty air, wind, dust and other corrosive factors. Panasonic has found a way to triple the life of our condensers, using a layer of our original anti-rust coating. This special coating lets you enjoy more years of reliable comfort plus extra economy over the long run.



Special Coating Layer (Fin Cross-section)



Cyclic Corrosion Test Results



Test Proven – Durability that lasts 3 times longer

Panasonic's condenser has 3 times higher resistance against corrosion. This special coating assures longer condenser life for years of reliable comfort.

Note: According to Panasonic test results.

Feature Comparison >> p.20~p.21

Easy-to-use Remote Controller

Wireless Remote Controller

Panasonic's wireless remote controller features a large Liquid Crystal Display (LCD) panel which makes it extremely user-friendly. So you can sit back and enjoy easy operation and long-lasting comfort from your Panasonic Air Conditioner.

LCD display for an easy overview of the operation status

ECONAVI mode determines human activity levels and automatically adjusts the air flow orientation for maximum comfort and maximum savings

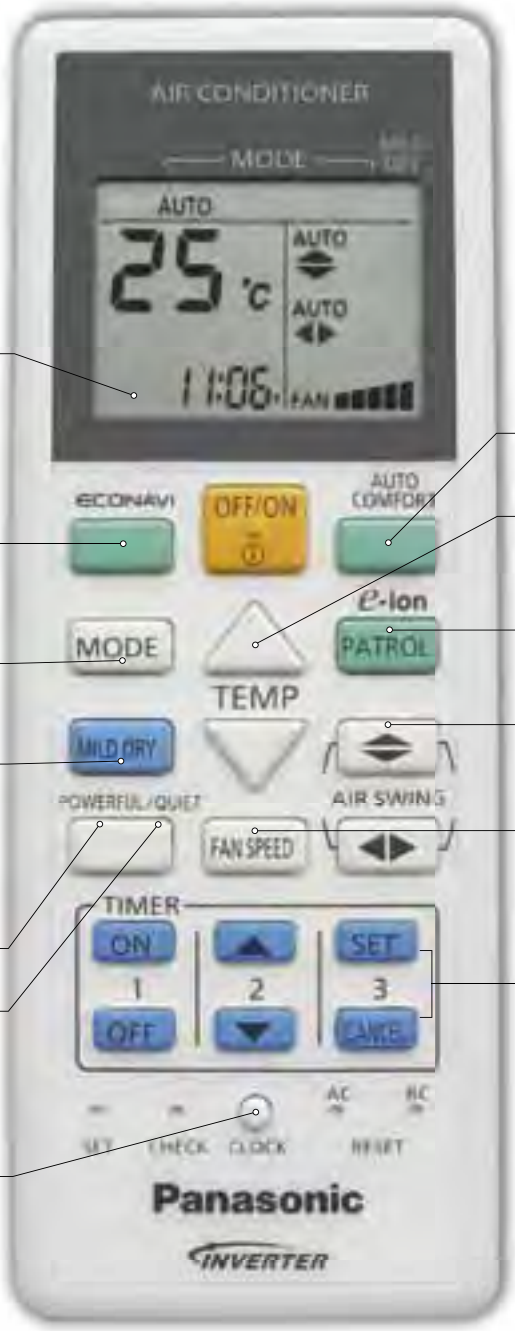
Toggles between AUTO, HEAT, COOL, DRY and FAN setting mode

Maintain higher level of Relative Humidity

Stronger airflow to cool the room more quickly

Reduces the indoor operating sound

Sets the actual time (hour and minute)



Autocomfort mode detects high activity levels and switches to comfort operation for maximum comfort.

Press up or down to set the temperature

Activates the air-purifying function even when the air conditioner is switched off

Sets the Airflow

Adjusts the fan speed

Sets the 24-hour ON & OFF Timer or 24-hour Dual ON & OFF Timer

Wireless

Applicable to Inverter Deluxe Reverse Cycle models.

QUIET OPERATION

Industry-leading quiet operation for more comfort

Quiet Mode

The Quiet Mode is even more effective than before during both cooling and heating.

As well as providing quieter indoor unit operation, it offers a function that also reduces outdoor unit noise.

The Quiet Mode reduces operation noise to a quiet 21dB* for a comfortable night's sleep.

* CS-E9MKR: during cooling/heating operation, CS-E12MKR: during cooling operation with low fan speed in the Quiet Mode.

Noise is 5dB*1 quieter than during regular operation, so less chance of bothering your neighbours.

*1 CU-E15/E18/E21/E24/E28/S18/S24/S28 MKR: In the Quiet Mode during cooling/heating operation with low fan speed

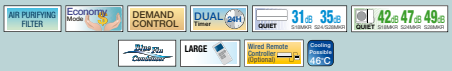
INVERTER SINGLE-SPLIT TYPE | Wall-Mounted

INVERTER

Cooling Capacity (kW)	Deluxe Reverse Cycle Pg 16	Deluxe Wide Reverse Cycle Pg 16
	NEW 	NEW 
2.6	**CS-E9MKR** (CU-E9MKR)	
3.5	**CS-E12MKR** (CU-E12MKR)	
4.4	**CS-E15MKR** (CU-E15MKR)	
5.0		**CS-E18MKR** (CU-E18MKR)
6.3		**CS-E21MKR** (CU-E21MKR)
7.1		**CS-E24MKR** (CU-E24MKR)
8.0		**CS-E28MKR** (CU-E28MKR)
Versatile Features		

INVERTER SINGLE-SPLIT TYPE | Wall-Mounted

INVERTER

Cooling Capacity (kW)	Deluxe Cooling Pg 18	Deluxe Wide Cooling Pg 18
	NEW 	NEW 
2.6	**CS-S9MKR** (CU-S9MKR)	
3.5	**CS-S12MKR** (CU-S12MKR)	
5.0		**CS-S18MKR** (CU-S18MKR)
7.1		**CS-S24MKR** (CU-S24MKR)
8.0		**CS-S28MKR** (CU-S28MKR)
Versatile Features		


Econavi

Autocomfort


Advanced+Plus e-ion Air Purifying System


Patrol Sensor


Mild Dry Cooling


Economy Mode


Demand Control


24-Hour Dual ON/OFF Real Setting Timer


Quiet Mode (Indoor) (cooling)


Quiet Mode (Outdoor) (cooling)


Air Purifying Filter


Blue Fin Condenser


Large Remote Controller


Wired Remote Controller (Optional)


Star Rating (Heating)


Star Rating (Cooling)


Heating Operation Lower Limit


Cooling Operation Higher Limit

Deluxe Reverse Cycle

ECONAVI

AUTOCOMFORT

Advanced+Plus e-ion Air Purifying System

Patrol Sensor

Mild Dry Cooling

FAN MODE

DUAL Timer 24H

Blue Fin Condenser

LARGE

Wired Remote Controller (Optional)

QUIET MODE

QUIET MODE

Except CU-E9/E12MKR

NEW

Large Remote Controller

Heating Possible -15°C

Cooling Possible 46°C

CS-E9MKR (4½ / 4½)

CS-E12MKR (3 / 3)

CS-E15MKR (2½ / 2½)

CS-E9MKR CS-E12MKR CS-E15MKR

QUIET 21dB E9MKR (21dB) 26dB E12MKR (21dB) 27dB E15MKR (23dB)

QUIET 41dB E15MKR (41dB)

Features

ECONAVI	AUTOCOMFORT	Advanced+Plus	Patrol Sensor			
MILD	mode			FAN MODE		
	24 DUAL	DEMAND CONTROL	3RD PARTY CONNECTIVITY	(Large)	(Optional)	
	15m					

NEW

Large Remote Controller

Heating Possible -15°C

Cooling Possible 46°C

CS-E18MKR (2½ / 2½)

CS-E21MKR (2 / 2)

CS-E24MKR (2½ / 2)

CS-E28MKR (2 / 2)

CS-E18MKR CS-E24MKR CS-E21MKR CS-E28MKR

QUIET 29dB E18MKR (31dB) 32dB E21MKR (33dB) 34dB E24MKR (34dB) 35dB E28MKR (35dB)

QUIET 42dB E18MKR (42dB) 47dB E21MKR (47dB) 48dB E24/E28MKR (48dB)

Features

ECONAVI	AUTOCOMFORT	Advanced+Plus	Patrol Sensor			
MILD	mode			FAN MODE		
	24 DUAL	DEMAND CONTROL	3RD PARTY CONNECTIVITY	(Large)	(Optional)	
	20m (E18/E21)	30m (E24/E28)				

Outdoor

CU-E9MKR/E12MKR

CU-E15MKR/E18MKR/E21MKR/E24MKR

CU-E28MKR

The figure shown is the value during cooling operation with low fan speed in the Quiet mode.

ECONAVI

Auto adjusts for maximum comfort and maximum savings

How ECONAVI works

ECONAVI with intelligent eco sensors detects the level of human presence in a room and the activity level to adjust output accordingly. This feature enables more energy saving by reducing energy waste.

Advanced+Plus e-ion Air Purifying System

Advanced+Plus e-ion Air Purifying System

e-ions are released to catch dust particles and deactivate bacteria and viruses. The positively-charged e-ion filter attracts dust particles to thoroughly clean the air.

Patrol Sensor

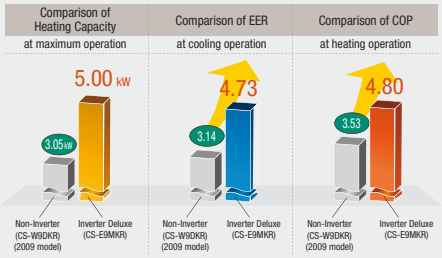
Patrol Sensor

Air is monitored both during air conditioner operation and when it's switched off. When dirt is detected, the air purifying function is started to immediately clean the air in the room.

INVERTER

Industry-Leading Energy Saving Rating Achieved by Inverter Technology

On top of the powerful heating, the longer you use the unit the more you can enjoy class-leading operation efficiency, which means an even bigger energy saving effect.



Specifications

Cooling
Heating

EER : Cooling Efficiency
COP: Heating Efficiency

Model (50Hz)			CS-E9MKR (CU-E9MKR)	CS-E12MKR (CU-E12MKR)	CS-E15MKR (CU-E15MKR)	CS-E18MKR (CU-E18MKR)	CS-E21MKR (CU-E21MKR)	CS-E24MKR (CU-E24MKR)	CS-E28MKR (CU-E28MKR)
Cooling Capacity		kW	2.60 (0.90~3.00)	3.50 (0.90~4.00)	4.40 (0.90~5.00)	5.00 (0.90~6.00)	6.30 (1.70~7.10)	7.10 (1.70~8.10)	8.00 (2.30~8.60)
		Btu/h	8,870 (3,070~10,200)	11,900 (3,070~13,600)	15,000 (3,070~17,100)	17,100 (3,070~20,500)	21,500 (5,800~24,200)	24,200 (5,800~27,600)	27,300 (7,840~29,300)
EER			4.73	4.22	3.67	3.85	3.50	3.36	3.35
Heating Capacity*2		kW	3.60 (0.80~5.00)	4.90 (0.80~6.70)	5.50 (0.90~7.10)	6.35 (0.90~8.00)	7.20 (1.70~8.50)	8.00 (1.70~9.90)	9.00 (2.20~11.00)
		Btu/h	12,300 (2,730~17,100)	16,700 (2,730~22,800)	18,800 (3,070~24,200)	21,700 (3,070~27,300)	24,600 (5,800~29,000)	27,300 (5,800~33,800)	30,700 (7,500~37,500)
COP		w/w	4.80	4.02	3.74	3.76	3.64	3.62	3.42
Star Rating			4.5 / 4.5	3.0 / 3.0	2.5 / 2.5	2.5 / 2.5	2.0 / 2.0	2.0 / 2.5	2.0 / 2.0
Electrical Data	Voltage	V	240	240	240	240	240	240	240
	Running Current	A	2.5 / 3.4	3.8 / 5.5	5.3 / 6.5	5.9 / 7.6	8.1 / 8.6	9.4 / 9.9	10.9 / 11.9
	Power Input	kW	0.55 (0.21~0.78)	0.83 (0.21~1.10)	1.20 (0.215~1.60)	1.30 (0.23~2.05)	1.80 (0.44~2.20)	2.11 (0.43~2.48)	2.39 (0.46~2.70)
			0.75 (0.175~1.36)	1.22 (0.175~1.89)	1.47 (0.245~2.25)	1.69 (0.26~2.65)	1.98 (0.40~2.50)	2.21 (0.38~3.00)	2.63 (0.50~3.30)
Noise: Sound Pressure Level*	Indoor (Hi/Lo/S-Lo)	dB(A)	41/25/21 39/27/21	41/26/21 44/29/26	45/30/23 43/31/27	45/34/31 42/33/29	45/36/33 45/35/32	47/37/34 47/37/34	49/38/35 48/38/35
	Outdoor (Hi/S-Lo)	dB(A)	46/— 46/—	48/— 49/—	46/41 46/41	47/42 47/42	52/47 52/47	53/48 53/48	53/48 53/48
Noise: Sound Power Level	Outdoor (Hi/S-Lo)	dB	61/— 61/—	63/— 64/—	61/56 61/56	61/56 61/56	66/61 66/61	67/62 67/62	71/66 71/66
Dehumid		L/h	1.6	2.0	2.4	2.8	3.5	4.1	4.7
Air Flow		L/s	182 / 202	202 / 218	225 / 233	283 / 295	282 / 273	327 / 339	340 / 349
Dimensions	Indoor H x W x D	mm	290 x 870 x 204	290 x 870 x 204	290 x 870 x 204	290 x 1070 x 235	290 x 1070 x 235	290 x 1070 x 235	290 x 1070 x 235
	Outdoor H x W x D	mm	619 x 824 x 299	619 x 824 x 299	795 x 875 x 320	795 x 875 x 320	795 x 875 x 320	795 x 875 x 320	1170 x 900 x 320
Net Weight	Indoor (Outdoor)	kg	9 (33)	9 (33)	9 (51)	12 (52)	12 (59)	12 (60)	12 (74)
Refrigerant Pipe Diameter	Liquid Side/ Gas Side	mm	6.35 / 9.52	6.35 / 12.70	6.35 / 12.70	6.35 / 12.70	6.35 / 12.70	6.35 / 15.88	6.35 / 15.88
Pipe Extension Length	Min.~Max.	m	3~15	3~15	3~15	3~20	3~20	3~30	3~30
Pipe Length for Additional Gas		m	7.5	7.5	7.5	10	10	10	10
Additional Refrigerant Gas		g/m	20	20	20	20	20	30	30
Power Supply			Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor
Operating Temperature Range (Outdoor)		Degree °C	5~46 / -15~24	5~46 / -15~24	5~46 / -15~24	5~46 / -15~24	16~46 / -15~24	16~46 / -15~24	16~46 / -15~24

*1 Sound pressure level specification is measured according to JIS C9612
*2 Maximum heating capacity shown are the values based on powerful operation

Rating Conditions

	Cooling	Heating
Inside air temperature	27°C DB /19°C WB	20°C DB
Outside air temperature	35°C DB	7°C DB/6°C WB

- Power plugs are not supplied with the unit.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and mains circuit for the model to be installed.
- Please read the Installation Instructions carefully before installing the unit, and read the Operating Instructions before using.

Deluxe Cooling

AIR PURIFYING FILTER

Economy Mode

DUAL Timer 24H

QUIET MODE

QUIET MODE

Except CU-S9/S12MKR

Blue Fin Condenser

LARGE

NEW

Large Remote Controller

Cooling Possible 46°C

3 CS-S9MKR

3 CS-S12MKR

CS-S9MKR CS-S12MKR

Features

QUIET 21 dB S9/S12MKR

AIR PURIFYING FILTER				mode		
	FAN MODE				24 DUAL	DEMAND CONTROL
3RD PARTY CONNECTIVITY	(Large)	(Optional)				

NEW

Large Remote Controller

Cooling Possible 46°C

2½ CS-S18MKR

2 CS-S24MKR

1½ CS-S28MKR

CS-S18MKR CS-S24MKR CS-S28MKR

Features

QUIET 31 dB 35 dB S18MKR S24/S28MKR

QUIET 42 dB 47 dB 49 dB S18MKR S24MKR S28MKR

AIR PURIFYING FILTER				mode		
	FAN MODE			24 DUAL	DEMAND CONTROL	3RD PARTY CONNECTIVITY
(Large)	(Optional)			20m (S18)	30m (S24/S28)	

Outdoor

CU-S9MKR/S12MKR

CU-S18MKR/S24MKR/S28MKR

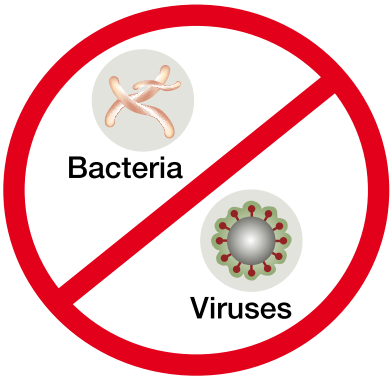
21 dB QUIET MODE 47 dB QUIET MODE The figure shown is the value during cooling operation with low fan speed in the Quiet mode.

Clean, Comfortable Air and Energy Saving Performance

New Filter Technology

Air Purifying Filter

The Air Purifying Filter combines three effects in one: anti-allergen, anti-virus, and anti-bacteria protection, to keep the room air clean and healthy.



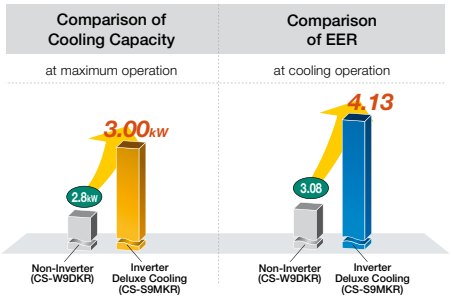
Economy Mode

The Economy mode reduces energy consumption by up to 20%* compared to the Normal mode by automatically adjusting the set temperature by up to 2ºC. It's ideal when you want to maintain room temperature for gentle cooling.

* Panasonic figures, at an outside temperature of DB35ºC/WB24ºC and set temperature of 25ºC (Cooling operation).

Highest Energy Saving Rating Achieved by Inverter Technology

Panasonic's high-efficiency technologies clear stringent energy-saving standards. Our new S9 and S12 models have attained Energy - Efficiency Rating 3.0 star, which places them as some of the industry's top class of energy savers. This means you can use these models everyday, without having to worry about the electricity bill.



Specifications

Model			(50Hz)	CS-S9MKR (CU-S9MKR)	CS-S12MKR (CU-S12MKR)	CS-S18MKR (CU-S18MKR)	CS-S24MKR (CU-S24MKR)	CS-S28MKR (CU-S28MKR)
Cooling Capacity			kW	2.60 (0.90 ~ 3.00)	3.50 (0.90 ~ 4.00)	5.00 (0.90 ~ 6.00)	7.10 (2.00 ~ 7.70)	8.00 (2.10 ~ 8.40)
			Btu/h	8,870 (3,070 ~ 10,200)	11,900 (3,070 ~ 13,600)	17,100 (3,070 ~ 20,500)	24,200 (6,820 ~ 26,300)	27,300 (7,160 ~ 28,600)
EER			W/W	4.13	4.07	3.85	3.26	3.25
Star Rating				3.0	3.0	2.5	2.0	1.5
Electrical Data		Voltage	V	240	240	240	240	240
		Running Current	A	2.9	4.0	5.7	9.5	11.0
		Power Input	kW	0.63 (0.24 ~ 0.88)	0.86 (0.25 ~ 1.18)	1.30 (0.24 ~ 1.85)	2.18 (0.47 ~ 2.40)	2.46 (0.43 ~ 2.60)
Noise	Sound Pressure Level*	Indoor (Hi/Lo/S-Lo)	dB(A)	37/26/21	38/28/21	42/34/31	47/38/35	50/38/35
		Outdoor (Hi/S-Lo)	dB(A)	47 / —	48 / —	47 / 42	52 / 47	54 / 49
	Sound Power Level	Outdoor (Hi/S-Lo)	dB	62 / —	63 / —	61 / 56	66 / 61	68 / 63
Dehumid			L/h	1.6	2.0	2.8	4.1	4.7
Air Flow			L/s	168	178	267	307	340
Dimensions		Indoor H x W x D	mm	290x870x204	290x870x204	290x1070x235	290x1070x235	290x1070x235
		Outdoor H x W x D	mm	619x824x299	619x824x299	795x875x320	795x875x320	795x875x320
Net Weight		Indoor (Outdoor)	kg	9 (30)	9 (32)	12 (50)	12 (56)	12 (57)
Refrigerant Pipe Diameter		Liquid Side/Gas Side	mm	6.35 / 9.52	6.35 / 12.70	6.35 / 12.70	6.35 / 15.88	6.35 / 15.88
Pipe Extension Length		Min.~Max.	m	3~15	3~15	3~20	3~30	3~30
Pipe Length for Additional Gas			m	7.5	7.5	10	10	10
Additional Refrigerant Gas			g/m	15	15	20	30	30
Power Supply				Outdoor	Outdoor	Outdoor	Outdoor	Outdoor
Operating Temperature Range (Outdoor)			Degree °C	5 ~ 46	5 ~ 46	5 ~ 46	16 ~ 46	16 ~ 46

* Sound pressure level specification is measured according to JIS C9612.

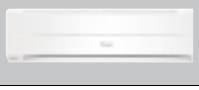
Rating Conditions

	Cooling
Inside air temperature	27°C DB /19°C WB
Outside air temperature	35°C DB

- Power plugs are not supplied with the unit.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and mains circuit for the model to be installed.
- Please read the Installation Instructions carefully before installing the unit, and read the Operating Instructions before using.

INVERTER SINGLE-SPLIT TYPE

			Deluxe Reverse Cycle	Deluxe Wide Reverse Cycle
			CS-E9MKR CS-E12MKR CS-E15MKR	CS-E18MKR CS-E24MKR CS-E21MKR CS-E28MKR
				
Healthier Air		Advanced+Plus e-ion Air Purifying System	●	●
		Patrol Sensor	●	●
		Air Purifying Filter		
		Odour-Removing Function	●	●
		Removable, Washable Panel	●	●
Comfort		ECONAVI	●	●
		AUTOCOMFORT	●	●
		Inverter Control	●	●
		Mild Dry Cooling	●	●
		Quiet Mode — Indoor	●	●
		Quiet Mode — Outdoor	● (E15)	●
		Powerful Mode	●	●
		Economy Mode		
		Heating Operation Lower Limit	-15°C	-15°C
		Cooling Operation Higher Limit	46°C	46°C
		Soft Dry Operation Mode	●	●
		Fan Mode	●	●
		Personal Airflow Creation	●	●
		Airflow Direction Control (Up & Down)		
		Manual Horizontal Airflow Direction Control		
		Wide & Long Airflow Vane	●	
		Auto Changeover (Inverter)	●	●
		Automatic Operation Mode		
		Hot Start Control	●	●
Convenience		24-Hour Dual ON/OFF Real Setting Timer	●	●
		Demand Control	●	●
		3rd Party Connectivity	●	●
		LCD Wireless Remote Controller	● (Large)	● (Large)
Reliability		Blue Fin Condenser	●	●
		Random Auto Restart	●	●
		Long Piping	15m	20m (E18/E21) 30m (E24/E28)
		Plug Type & Ampere Capacity *The plug must be installed	Outdoor Power Supply	Outdoor Power Supply
		Top-Panel Maintenance Access	●	●
		Self-Diagnostic Function	●	●

Deluxe Cooling	Deluxe Wide Cooling
CS-S9MKR CS-S12MKR	CS-S18MKR CS-S24MKR CS-S28MKR
	
●	●
●	●
●	●
●	●
●	●
	●
●	●
●	●
46ºC	46ºC
●	●
●	●
	●
●	
●	
●	
●	●
●	●
●	●
●	●
● (Large)	● (Large)
●	●
●	●
15m	20m (S18) 30m (S24/S28)
Outdoor Power Supply	Outdoor Power Supply
●	●
●	●

Comfort

ECONAVI

ECONAVI mode determines human activity levels and adjusts the air flow orientation for maximum comfort and maximum savings.
» see page 4-6

AUTOCOMFORT

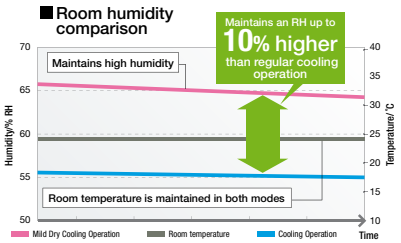
Autocomfort mode detects high activity levels and switches to comfort operation for maximum comfort. » see page 7

Inverter Control

An inverter air conditioner provides optimum power control, which is impossible for conventional units. The secret lies in the inverter circuit. By changing the frequency of power supply, this circuit alters the rotation speed of the compressor, which is the heart of the air conditioner. The result is comfortable, economical air conditioning.

Mild Dry Cooling

Fine control helps prevent a rapid decrease in room humidity while maintaining the set temperature. Maintains an RH* of up to 10% higher than cooling operation. Ideal when sleeping with the air conditioner on.

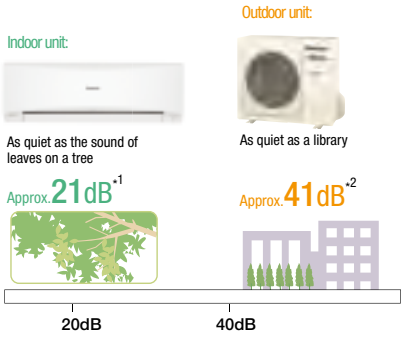


Graphic representation

*RH : Relative Humidity

Quiet Mode

The Quiet Mode reduces both indoor and outdoor unit operating sound. This function is especially convenient for operation near a sleeping baby and at night-time.



*1 CS-E9MKR: In the Quiet mode during heating/cooling operation with low fan speed.
CS-E12MKR: In the Quiet mode during cooling operation with low fan speed.
*2 CU-E15MKR: In the Quiet Mode during cooling/heating operation with low fan speed.

Soft Dry Operation Mode

Starts with cooling to dehumidify. Then provides continuous breeze at low frequency to keep room dry without much change in temperature.

Powerful Mode

Pressing the Powerful button cools or heats the room quickly. It provides fast comfort, with full power and a strong airflow. This is perfect for use immediately after coming home, or when unexpected guests arrive.

Economy Mode

The Economy mode reduces energy consumption by up to 20%* compared to the Normal mode by automatically adjusting the set temperature by up to 2°C. It's ideal when you want to maintain room temperature for gentle cooling and heating.

* Panasonic figures, at an outside temperature of DB35°C/WB24°C and set temperature of 25°C (Cooling operation)

Heating Operation Low Limit

Providing outstanding cold climate performance, Panasonic air conditioners let you enjoy stable heating even when the outside temperature is below freezing. Add to this exceptional durability and reliability and you're looking at worry-free operation for comfort during the harsh winter.

Cooling Operation Higher Limit

Cooling is possible even when the outside temperature is extremely hot. Highly durable compressor and fan motor helps to maintain room comfort even under the hottest conditions.

Auto Changeover (Inverter)

Change automatically from cooling to heating in function of the temperature of the room.

Automatic Operation Mode

Hot Start Control

On the start of heating cycle and after defrost cycle, the indoor fan will start up once the indoor heat exchanger is warm.

Personal Airflow Creation

Vertical and horizontal airflow patterns can be combined as desired to gain the greatest possible comfort, with operation possible even from a distance by remote control.

- Up & Down Airflow — 5 Patterns + Auto


When you don't want airflow directed right at you.
When you want direct airflow.
When you want to warm yourself thoroughly from the feet up.

- Left & Right Airflow — 5 Patterns + Auto


To focus the airflow to one side of the room.
To focus the airflow to the centre.
For uniform airflow throughout the room.

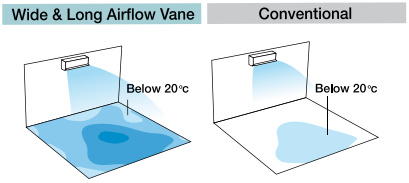
Airflow Direction Control (Up & Down)

Manual Horizontal Airflow Direction Control

Fan Mode

Wide & Long Airflow Vane

This newly designed vane has been integrated with the louver to send the air further to every corner of the room to keep the whole room comfortable.



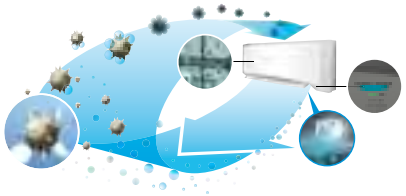
Conditions: • Our simulated-house facility 13.2m²
• Set temperature 25°C

Not all features found on all models.

Healthier Air

Advanced+Plus e-ion Air Purifying System

e-ions are released to catch dust particles and deactivate bacteria and viruses. The positively-charged filter attracts dust particles to thoroughly clean the room.



Patrol Sensor

Air is monitored both during air conditioner operation and when it's switched off. When dirt is detected, the air purifying function is started to immediately clean the air in the room.

Removable, Washable Panel

The front panel is easy to keep clean. It removes quickly with a simple one-step operation and can be washed in water. A clean front panel promotes smoother, more efficient performance, which can save energy.

Odour-Removing Function

With this function, there's no unpleasant odour when the unit starts up. That's because the fan remains off momentarily, while the source of the odour inside the air conditioner is suppressed.

The unit must be in cool or dry mode and the fan speed must be set to automatic.

Air Purifying Filter

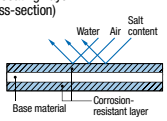
The Air Purifying Filter combines three effects in one — anti-allergen, anti-virus, and anti-bacteria protection — to keep room air clean and healthful.

Reliability

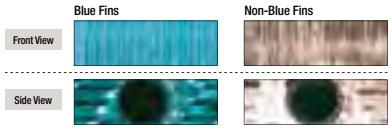
Blue Fin Condenser

Condensers can take a beating from exposure to salty air, rain and other corrosive factors. Panasonic has tripled the life of our condensers with an original anti-rust coating.

Special Coating Layer (Fin Cross-section)



Cyclic Corrosion Test Results



This was tested by: 1. Panasonic HA Air-Conditioning R&D (M) Sdn. Bhd.
2. A third party authorized research institute in Malaysia.

Random Auto Restart

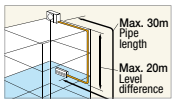
All models are now safe to operate without a starter. With the exclusive Random Auto Restart feature, the air conditioners automatically restart after power failure. Its 32 different recovery-timing patterns ensure that air conditioners in the same building resume one after another instead of all at the same time. This feature helps prevent power surges after a blackout.

Self-Diagnostic Function

Should a malfunction occur, the unit diagnoses the problem and shows the corresponding alphanumeric code. This allows quicker servicing.

Long Piping

The basic piping can be extended, allowing the outdoor unit to be installed further away from the indoor unit and providing greater installation flexibility.



The graph refers to the CS-E24/E28MKR. Extendable length varies by model. If the piping is extended past the basic pipe length, there's an extra charge for additional refrigerant.

Top-Panel Maintenance Access

Maintenance of the outdoor unit used to be quite a tedious chore, especially when the unit was installed on a narrow balcony or attached to the outer wall of a high-rise building.

Convenience

LCD Wireless Remote Controller

24-Hour Dual ON & OFF Real Setting Timer

This feature enables you to preset two different sets of start/stop operation timer (hour and minute) within a 24-hour time frame.

Demand Control

3rd Party Connectivity

The System of Model Numbers for Split Models

CS – E 9 M K R

1 2 3 4

1 Model Type
CS : Split Type (Indoor unit) CU : Split Type (Outdoor unit) CZ : Accessories

2 Function
E : Inverter Deluxe (Reverse cycle)
S : Inverter (Cooling only)

3 Capacity
Value = Capacity (Btu/h) x 1/1000e.g. 18,000 Btu/h x 1/1000 = 18

4 Type
K : Wall-Mounted Type

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- PC via Panasonic Australia website

Quality Management System Certificate

Certified to ISO 9001: 2008
Panasonic HA Air-Conditioning (M) Sdn.Bhd.
Cert. No.: MY-AR 1010

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Panasonic Home Appliances
Air-Conditioning (Guangzhou) Co., Ltd.
Registration Number:
01209Q20645R5L

Certified to ISO 9001: 2008
Registration Number: 01209Q20645R5L

Environmental Management System Certificate

Certified to ISO 14001: 2004
Panasonic HA Air-Conditioning (M) Sdn.Bhd.
Cert. No.: MY-ER0112

Certified to ISO 14001: 2004
Cert. No.: MY-ER0112

Certified to ISO 14001: 2004
Panasonic Home Appliances
Air-Conditioning (Guangzhou) Co., Ltd.
Registration Number:
02107E10411R3L

Certified to ISO 14001: 2004
Registration Number: 02107E10411R3L

Standard Warranty

5 Years

Panasonic

Panasonic Customer care centre 132600

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We will promote lifestyles with virtually zero CO_2 emissions all throughout the world

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