



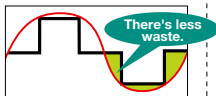
## More Advantages with Panasonic

### DC Inverter (Hyper Wave Inverter)

Original Panasonic inverter circuit technology provides detailed motor current control. A comfortable room temperature is maintained with less energy, vibration, and noise.

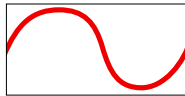
#### ■ Our conventional inverter

The current waveform deviates from the motor voltage waveform, so power is wasted.



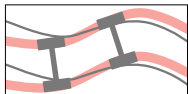
#### ■ Hyper Wave Inverter

The current waveform closely matches the motor voltage waveform, so power consumption is reduced.

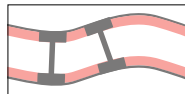


#### Compare this to a car rounding a corner

Power is wasted when the car swings off course.



When the car stays right on course, there's no power loss.



15,000 Btu/h and above models

### e-scroll Compressor

#### Saves energy:

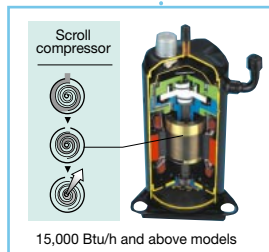
Newly developed bearing reduces oscillation and mechanical loss.

#### Compact size, light weight:

New DC motor with rare-earth magnet and no accumulator.

#### Less noise and vibration:

Smooth, continuously operating vortex blades.



# 2007

# Air Conditioners

# SALES HAND BOOK



AC-SHB-EU-07

# Contents

## e-ion Air Purifying System with Patrol Sensor

1	2-in-1 Unit with Air Purifier	4
2	Boomerang-like Mechanism	5
3	Patrol Sensor	6
4	Active e-ion	7
5	Electric Dust Collection	8
6	Mega e-ion Filter	9
7	FAQ	10,11

## Inverter Technology

	What's an Inverter?	12
1	Flexible Power Control	13
2	Quick Comfort	14
3	Energy Saving	14
4	Super Quiet	15

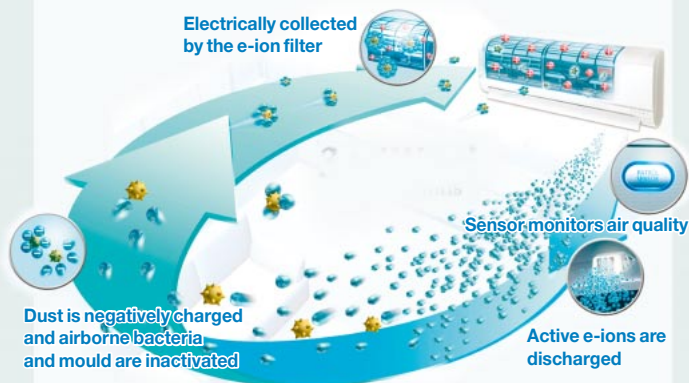


## e-ion

### Air Purifying System with Patrol Sensor

In recent years our living environment has continued to become worse day by day. One concern is air quality. Minute particles of harmful substances are constantly putting our health at risk. Maintaining clean air in the home to assure safe, secure daily life will soon be essential. Against this background, Panasonic has further improved the air purifying function in this year's air conditioners. The result is dual performance offering optimum control of room air quality as well as temperature control.

### 2007 Advanced Air Purifying Function



Point 1

## 2-in-1 Unit with Air Purifier

### Air conditioning and air purifying – 2 functions in one unit!

e-ion Air Purifying performance is the same as a full-scale air purifier based on the JEM\*1 standard. A single unit provides both air conditioning and air purification so it's really economical.

\*1 JEM: Standard of the Japan Electrical Manufacturers' Association

#### New Air Conditioner

Superb – 2 units in one value!



Moisture\*2  
Control

Temperature  
Control

Dust  
Collection

Inactivating  
Virus, Bacteria,  
Mould



#### Air Conditioner



Moisture\*2  
Control

Temperature  
Control



#### Air Purifier



Dust  
Collection

Inactivating  
Virus, Bacteria,  
Mould

\*2 Dehumidifying only

## 2-in-1 Unit Benefits

Economical

Convenient

Space  
Saving

Point 2

## Boomerang-like Mechanism

### Active e-ions are shot out to catch dust and bring them back to the filter.



Active e-ions discharged from the active e-ion generator catch dust. Then it's firmly trapped in the filter by an electrical dust collection system. This series of mechanisms thoroughly cleans the room.



Wow, it's like a boomerang - now that's an active system!



\* 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<sup>2</sup>): 100k/cc. Calculated number of active e-ions in the entire room assuming they are evenly distributed.

#### Panasonic's Original Mechanism

### 1 Patrol Sensor

It monitors dirt in the air and starts air purifying function as soon as it is detected.

### 2 Active e-ion Generator

Active e-ions are discharged to catch dust.

### 3 Active e-ion

Dust is negatively charged and airborne bacteria and mould are inactivated.

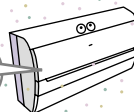
### 4 Mega e-ion Filter

Positively charged, it attracts negatively charged dust particles to firmly capture them.

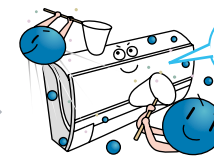
#### Conventional

The filter passively captures only dust that passes through it.

It doesn't move, it just waits



#### e-ion Air Purifying System



Actively hunts dust

Point  
3

## Patrol Sensor

### A sensor monitors dirt in a room 24 hours a day!



When there's dirt around, someone smokes a cigarette or there are pet odours, the air in a room soon becomes dirty. Even then the Patrol Sensor puts you at ease because it automatically starts air purifying operation.

On guard 24 hours a day!



This kind of dirt is detected



Indicator lights blue during operation.

## How it Works

### Monitoring

Whether the air conditioner is operating or not, the sensor constantly monitors dirt in the air.

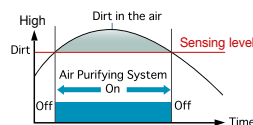
\*The Patrol function can be switched ON/OFF by remote control.

### Detection

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

#### Measurement method

If airborne dirt concentration exceeds the sensing level, the air purifying function is switched on.



### Operation

When dirt is detected, e-ion Air Purifying System starts operating to thoroughly clean the room.

#### Conventional

When the air conditioner is switched off, the air purifying function doesn't operate. So if there is dirt in the room, it stays there until the air conditioner is switched on.

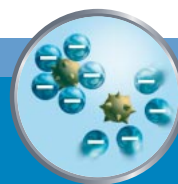
You don't notice when the air's dirty, do you?



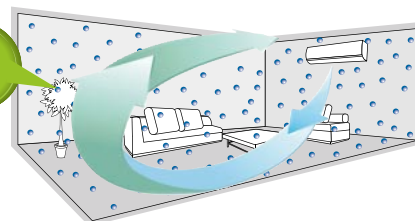
Point  
4

## Active e-ion

### Negative charging for faster dust collection/Inactivating airborne virus and bacteria



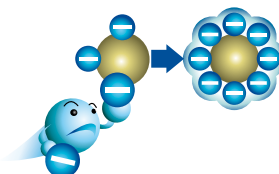
3 trillion Active e-ions



A large number of active e-ions are discharged to catch and inactivate airborne mould and bacteria on the spot throughout the room.

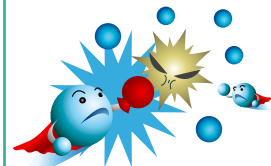
## 2-Function of active e-ion

### Negative Charging



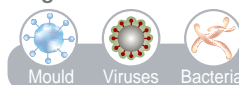
Negatively charges dust particles to enable effective collection by the positively charged filter.

### Inactivating



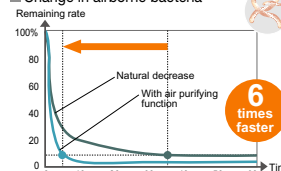
Inactivates bacteria and mould to make them harmless.

#### Target substances



### Removal Performance

#### Change in airborne bacteria



Mould **3.5 times faster**

\* Measurement conditions

Certified by Japan Food Research Laboratories  
Test report number: 304110078-001

Test method: The e-ion Air Purifying System was operated in a test room (10m<sup>2</sup>) and changes in airborne mould and bacteria were measured by means of the Air Sampler Method (MAS100).

### Inactivating Effect

Inactivating effect was certified by Japan Food Research Laboratories as indicated below.



Viruses

**99.9%\*1**  
Inactivating



Bacteria

**100%\*2**  
Inactivating

\*1 Test report number: No. 204101750-001

Virus: Influenza virus A

\*2 Test report number: No. 205010211-001

Bacteria: Staphylococcus aureus subsp. aureus (NBRC12732)



Point 5

## Electric Dust Collection

**More effective collection using negative and positive attraction.**

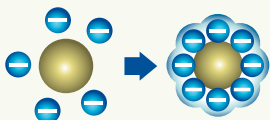


Using the force of attraction between positive and negative charges, the filter powerfully pulls in dust particles.

—

### Dust is negatively charged

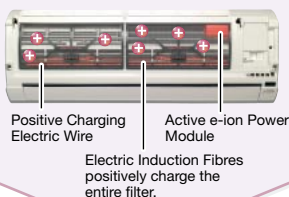
Active e-ions surround dust particles to negatively charge them.



+

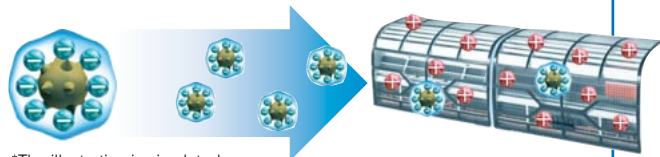
### The filter is positively charged

The Electric Wire positively charges the electric induction fibres throughout the entire air filter mesh.



## Powerful collection using negative and positive attraction!

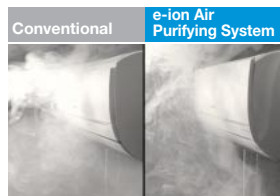
Negatively charged dust particles are pulled in electrically by the positively charged e-ion filter.



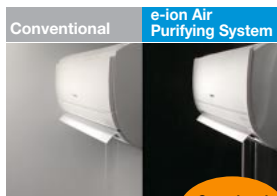
\*The illustration is simulated

## Smoke collection comparison test

See the difference!



After 5 minutes



Still not completed

Completed in 5 minutes

Point 6

## Mega e-ion Filter

**Bigger and finer for dramatically improved dust collection.**



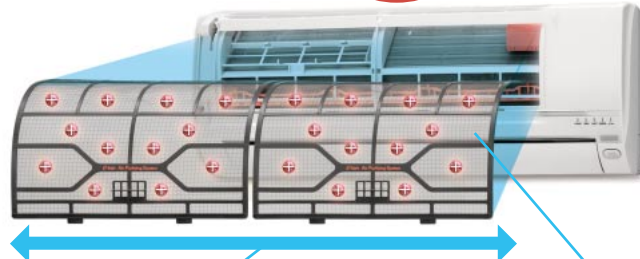
The bigger the air purifying filter and the finer the filter mesh, the better the ability to thoroughly trap dust particles.

So the entire surface of the air conditioner is an air purifying filter - amazing!



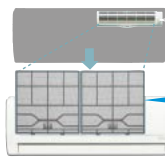
8 Patents\* applied for

\* Panasonic has applied for 8 patents relate to e-ion Air Purifying technology. (As of November, 2006)



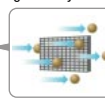
## 7 times bigger

Conventional



e-ion Filter

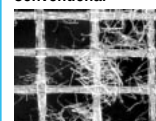
A lot of dust gets away.



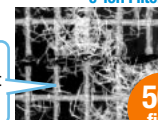
Dust is firmly captured over a wide area.

## Ultra-fine mesh!

Conventional



e-ion Filter



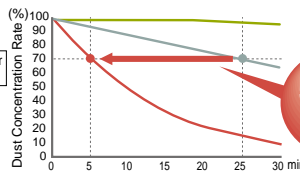
Also captures microscopic dust (100-1,000μm)

50% finer

## Dirt decrease speed comparison

— Natural Decrease — Conventional Filter — e-ion Filter

\*Panasonic in-house investigation. After 5 cigarettes were smoked in a roughly 20m<sup>3</sup> room, air conditioner operation was started and the decrease in particulate concentration was measured with a dust meter.



About 5 times\* more Efficient

**2 actions for more efficient dust collection than ever!**

Electric Dust Collection



Bigger and Finer Mega Filter

# FAQ

**Q:** Can the e-ion Air Purifying System be used independently? (Regardless of whether the air conditioner is cooling/heating or not)

**A:** Yes.  
You can switch it ON and OFF by pressing the e-ion button on the remote controller.

**Q:** Can the Patrol Sensor be used during cooling operation and independently?

**A:** Yes.  
You can switch it ON and OFF by pressing the PATROL button on the remote controller. (Regardless of whether the air conditioner is cooling/heating or not)

**Note:** In the initial setting, the Patrol Sensor automatically starts operating as soon as cooling/heating operation begins.

**Q:** When the air conditioner unit is switched OFF, the Patrol Sensor is switched ON. What happens when the Patrol Sensor detects dirt?

**A:** Air conditioner air flow starts and the e-ion Air Purifying System begins operating. (There is no cooling or heating operation)

**Q:** What is the electricity consumption?

- a During Patrol Sensor operation only
- b During e-ion Air Purifying and Patrol Sensor operation (without cooling/heating operation)

**A:** Electricity consumption is very low.

- a 2.9W
- b 29W

\* Electricity consumption during cooling operation is 590W (min. 175W–max. 750W), with CS-E9GKEW.

**Q:** Do e-ions harm the human body?

**A:** They have no effect on the human body.

**Q:** How do e-ions differ from conventional negative ions?

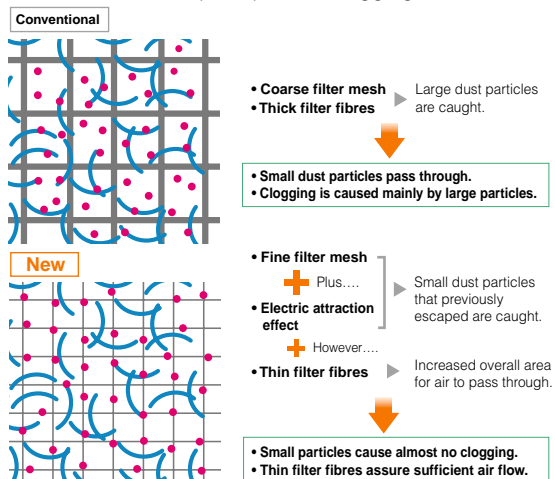
**A:** An advanced version of regular negative ions, e-ions are a unique technology developed by Panasonic. Applying their exceptional performance in a revolutionary “e-ion Air Purifying System” provides both air purification and inactivation.

**Q:** Can the electrically charged filter and ion generator cause electric shock if touched?

**A:** The electric charge is too small to cause electric shock. Furthermore, the high voltage section features protection circuitry that regulates electrical current to assure safety.

**Q:** Isn't cleaning the e-ion filter troublesome and doesn't it become easily clogged with dust?

**A:** Not at all. It has to be cleaned as frequently as a conventional air filter. (Cleaning is recommended once every 2 weeks.)  
The e-ion filter uses much finer fibres than those in conventional filters to improve air flow through the filter, which helps to prevent clogging.



\* The illustration is simulated.



# Inverter Technology

Recently, air conditioner use in the home is increasing. This has been accompanied by concern about rising electric bills and the need for energy saving. At the same time, there is also increasing demand for a higher level of comfort. Advanced inverter technology satisfies these needs. Boasting revolutionary energy saving and exceptional comfort, the inverter delivers next-generation air conditioning.



**INVERTER**

## Market background

Increased energy conservation awareness

Deteriorating energy situation

Government promotion of energy-saving measures (energy-saving labeling)

Concern about increasing electric bills

Concern about environmental protection

**More energy saving  
More comfortable air conditioning!**

We want to reduce electric bills

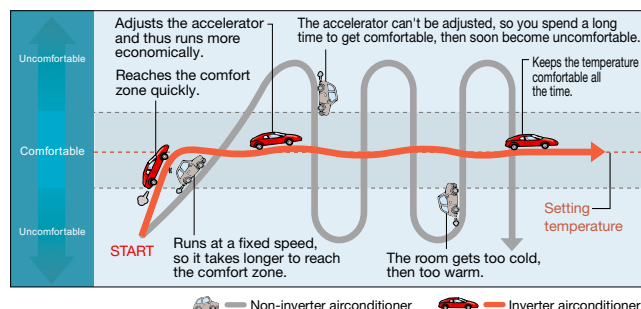
We want more natural comfort

We want high power at certain times

## What's an Inverter?

An inverter features control technology that flexibly changes compressor operation speed to suit different situations. By doing this, it raises and lowers output power to adjust it as required. In non-inverter air conditioners, output power is constant. That's why fine control isn't possible. With an inverter model, the optimum power output is selected to match room temperature changes for a higher level of air conditioning than ever before.

	Non-inverter	Inverter
<b>Feature</b>	Compressor operation speed is fixed	Compressor operation speed varies
<b>Power</b>	Fixed (ON/OFF)	Variable



## INVERTER BENEFITS

### 1 Energy Saving

Once the set temperature is reached, output is switched to minimum to save power. Thanks to this highly efficient operation, electric bills are reduced.



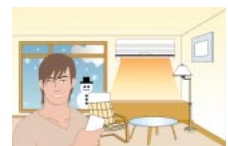
### 2 Quick Comfort

Maximum power directly after the start of operation assures powerful and therefore rapid cooling and heating.



### 3 Flexible Power Control

Finely adjusts power to match conditions to improve efficiency for optimum operation.



### 4 Super Quiet

The indoor unit delivers quiet operation with low fan speed. And pressing the Quiet mode button lowers operation noise even further to just 21dB\*.



\*CS-E7/E9/E12GKEW

Point  
1

## Flexible Power Control

### Wide power range keeps the room at just the right temperature all the time

As well as changes in outdoor temperature, room temperature is influenced by the number of people in the room and the opening and closing of doors. An inverter model precisely detects minute temperature changes and flexibly adjusts output power to always maintain a comfortable temperature.

I see – it keeps us comfortable by choosing just the right amount of power!

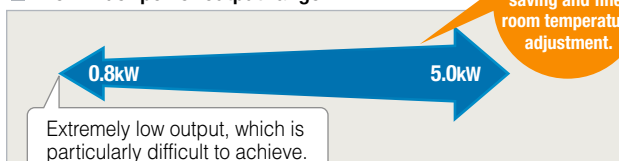


## More Benefits with Panasonic Inverter

Original Hyper Wave inverter technology and the e-scroll compressor enable even more detailed and advanced inverter control, providing an even wider power output range while reducing energy consumption, vibration and noise.

### Even wider power output range

Provides higher energy saving and finer room temperature adjustment.



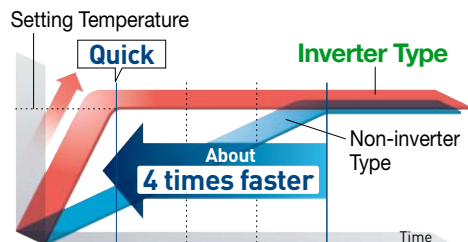
\* The graph shows the CS-E9GKEW's wide power output range during heating.

Point  
2

## Quick Comfort

### Cools and heats rapidly after it's switched on by powerful operation

A big advantage of inverter air conditioners is that they can provide high power when it counts. This higher level of power, which is not usually used, is provided at the start of operation, when the number of people in a room increases and at other times to quickly and powerfully make the room comfortable.



\* Comparison of 9,000 Btu inverter and non-inverter models during heating.

Point  
3

## Energy Saving

### About half the electricity consumption as before!

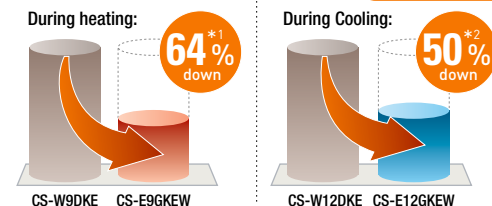
It's really economical to run!

After reaching the set temperature, an inverter air conditioner continues operating with minimum power to prevent unnecessary electricity consumption. On the other hand, non-inverter models are either switched on or off, resulting in more energy consumption. That's why they waste electricity.

The more you use it the more you save!



### Electric Consumption Comparison



\*1 Comparison of cumulative electricity consumption during heating to reach the setting temperature (Panasonic in-house comparison) Test conditions: Indoor and outdoor temperature: 7°C/ Setting temperature: 25°C/ Fan speed: High

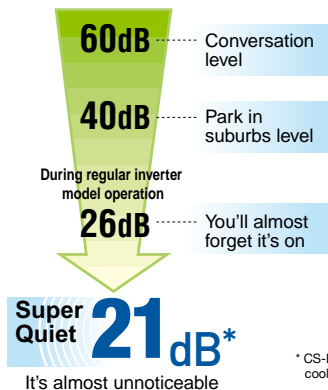
\*2 Comparison of cumulative electricity consumption during 8 hours of cooling (Panasonic in-house comparison) Test conditions: Room temperature at start: 35°C/ Setting temperature: 25°C

Point  
4

## Super Quiet

### Pressing the Quiet button immediately reduces noise to a low 21dB.

Without the annoying switching noise of non-inverter air conditioners, operation is so quiet you'll forget the unit is switched on. And at bed time, pressing a button lets you enjoy even quieter 21dB Quiet Mode operation.



\* CS-E7/E9/E12GKEW: In the Quiet mode during cooling operation with low fan speed