

Panasonic

Air Conditioners 2012/2013



ONE TOUCH TO CHANGE THE FUTURE

Every little effort can add up to make a big difference. Our choices and behaviours have a ripple effect that reaches across the world today, and on to our future generations. All it takes is just one touch of a button to change the future.



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Living an eco lifestyle doesn't mean you need to compromise on comfort. With Inverter, you can still enjoy refreshingly cool air while reducing energy consumption by half. To further detect and reduce waste, now there is ECONAVI to give you even more energy savings. And, for a cleaner living environment, there is new nanoe-g that helps purify the air as well as our surroundings. Together, these breakthrough technologies define what Panasonic's Eco Friendly Innovation is all about – innovations that improve our environment while making life as comfortable as possible.



Panasonic Air Conditioners - in the pursuit of Eco Friendly Innovation

INTELLIGENT ECO SENSORS



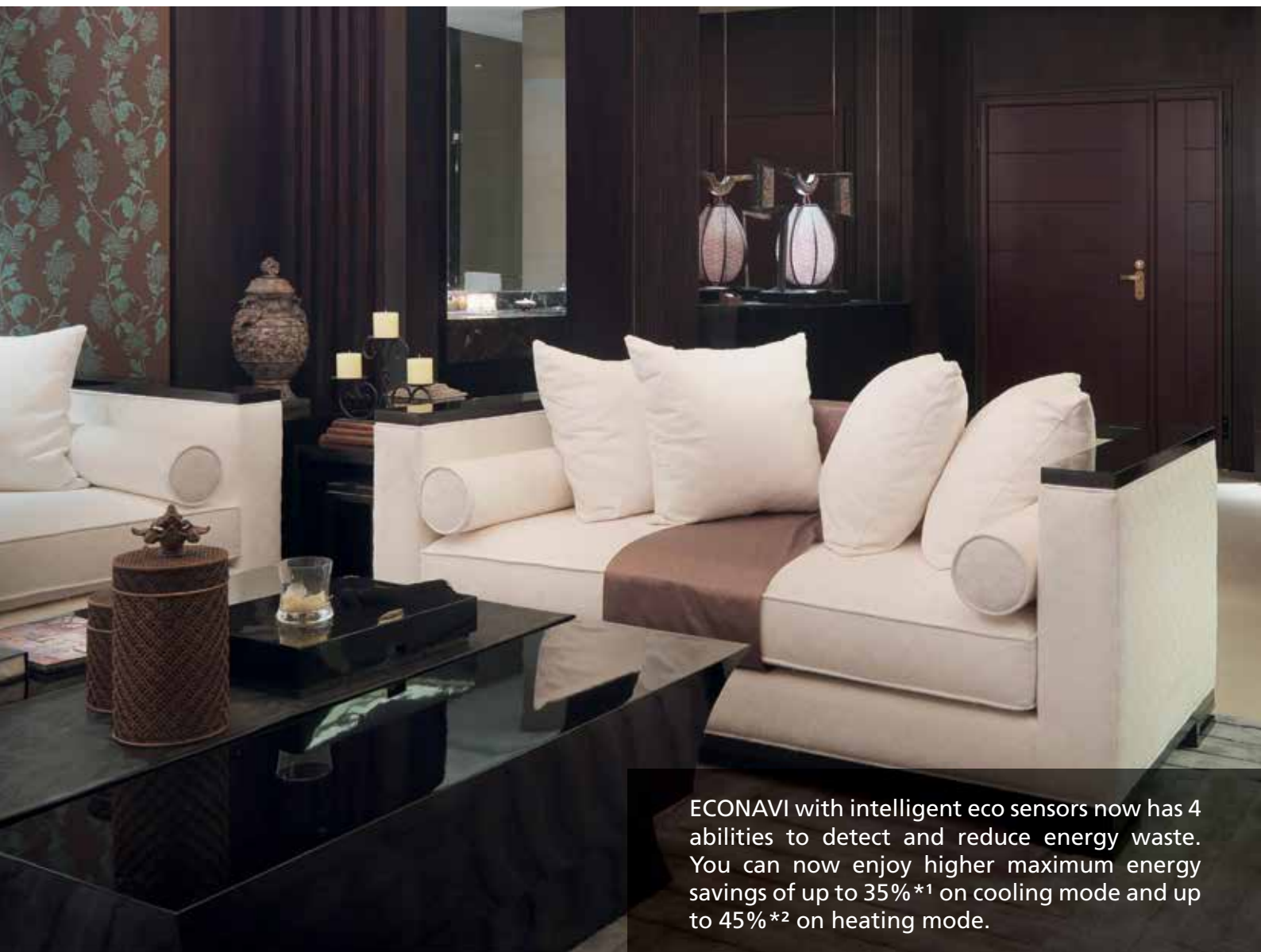
ECONAVI features intelligent Human Activity Sensor and new Sunlight Sensor technologies that can detect and reduce waste by optimising air conditioner operation according to room conditions. With just the touch of a button, you can save energy efficiently with uninterrupted cooling, comfort and convenience.



Inverter technology provides a high-precision method of maintaining the room set temperature by varying the rotation speed of the compressor; thus giving you energy savings of up to 50%.



nanoe-G utilises nano-technology fine particles to purify the air in the room. It works effectively on airborne and surface based micro-organisms such as bacteria, viruses and mould thus ensuring a cleaner living environment.



ECONAVI with intelligent eco sensors now has 4 abilities to detect and reduce energy waste. You can now enjoy higher maximum energy savings of up to 35%*1 on cooling mode and up to 45%*2 on heating mode.

During Cooling

Up To
35%*1
ENERGY SAVINGS

***1 Comparison of 3.5kW Inverter model with ECONAVI dual sensor ON and OFF (Cooling)**

ECONAVI dual sensor ON, Outside temperature: 35°C/24°C
Remote setting temperature: 23°C with Fan Speed (High)
Vertical Airflow direction: Auto, Horizontal Airflow direction: ECONAVI Mode
Setting temperature goes up 2°C in total, 1°C controlled by ECONAVI activity level detection and another 1°C controlled by ECONAVI light intensity detection.

ECONAVI dual sensor OFF, Outside temperature: 35°C/24°C
Remote setting temperature: 23°C with Fan Speed (High)
Vertical Airflow direction: Auto, Horizontal Airflow direction: Front

Total power consumption amount is measured for 1 hour in stable condition.
At Panasonic Amenity Room (size:16.6m²)
This is the maximum energy savings value, and the effect differs according to conditions in installation and usage.

During Heating Up to 45%*2 ENERGY SAVINGS

***2 Comparison of 3.5kW Inverter model between with ECONAVI dual sensor ON and OFF (Heating)**

ECONAVI dual sensor ON, Outside temperature: 2°C/1°C, Remote setting temperature: 26°C with Fan Speed (High), Vertical Airflow direction: Auto,
Horizontal Airflow direction: ECONAVI Mode, Setting temperature goes down 3°C in total, 2°C controlled by ECONAVI activity level detection and another 1°C controlled by ECONAVI light intensity detection.
ECONAVI dual sensor OFF, Outside temperature: 2°C/1°C, Remote setting temperature: 26°C with Fan Speed (High), Vertical Airflow direction: Auto, Horizontal Airflow direction: Front

Total power consumption amount is measured for 1 hour in stable condition. At Panasonic Amenity Room (size:16.6m²)
This is the maximum energy savings value, and the effect differs according to conditions in installation and usage.

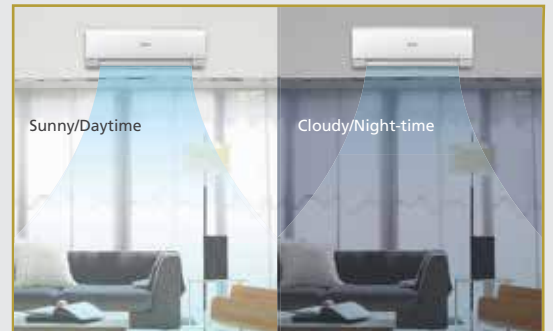


SUNLIGHT DETECTION

NEW

■ Sunlight Detection

ECONAVI detects changes in sunlight intensity in the room and judges whether it is sunny or cloudy, daytime or night-time and reduces the waste of **cooling under less sunlight conditions**.



HUMAN ACTIVITY DETECTION

■ Area Search

ECONAVI detects human movements and reduces the waste of **cooling the unoccupied area of the room**.



■ Activity Detection

ECONAVI detects changes in activity levels and reduces the waste of **cooling with unnecessary power**.



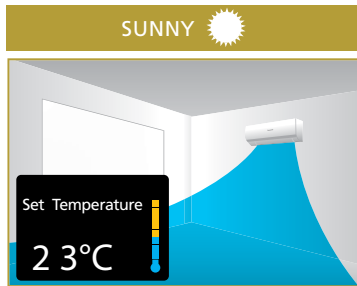
■ Absence Detection

ECONAVI detects human absence in the room and reduces the waste of **cooling an empty room**.

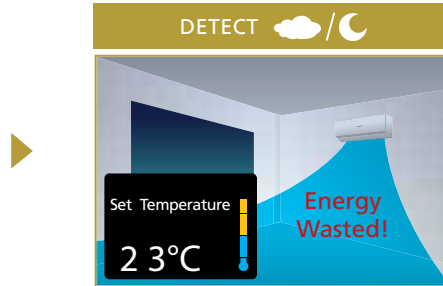


NEW SUNLIGHT DETECTION (COOLING)

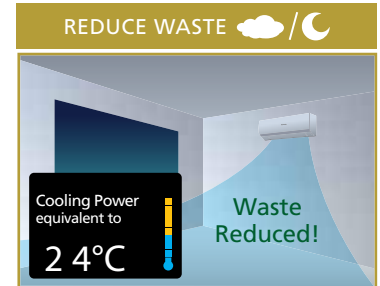
ECONAVI detects changes in sunlight intensity in the room and judges whether it is sunny or cloudy, daytime or night-time. It reduces the waste of **cooling under less sunlight conditions**.



ECONAVI is switched on when it is SUNNY.



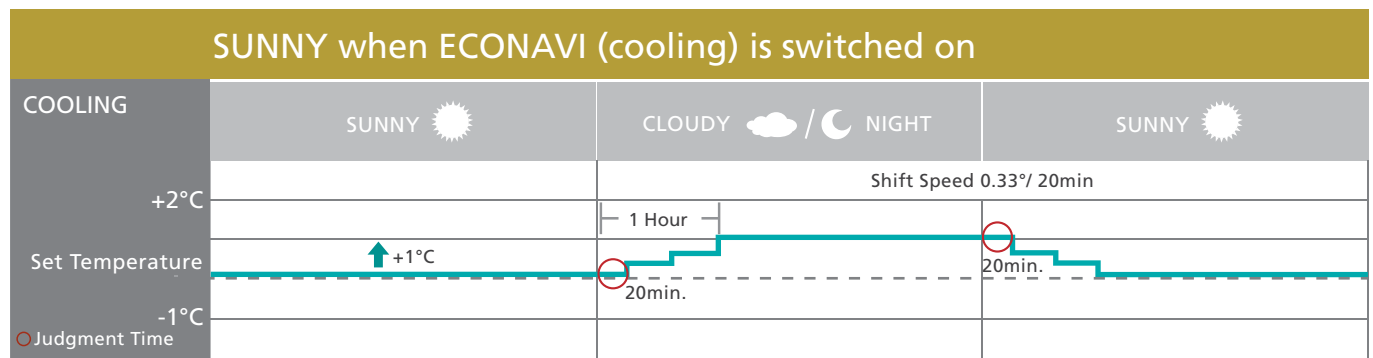
ECONAVI detects less cooling power is required.



Set temperature remain unchanged. ECONAVI reduces cooling power by an amount equivalent to increasing the set temperature by 1 degree Celsius.

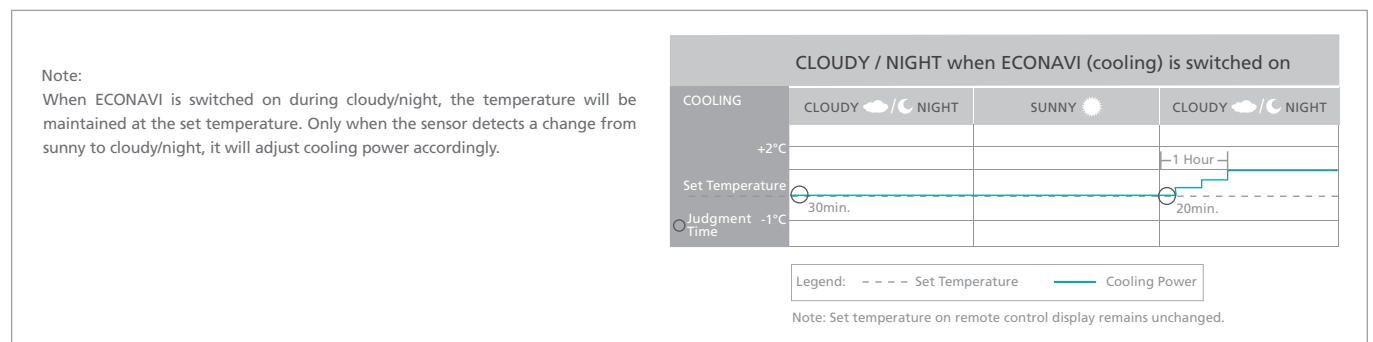
When weather changes from sunny to cloudy or daytime to night-time, ECONAVI detects less sunlight intensity and determines less cooling power is required. If cooling power remains the same, energy will be wasted. ECONAVI detects this waste and reduces cooling power by an amount equivalent to increasing the set temperature by 1 degree Celsius.

How does ECONAVI Sunlight (cooling) Sensor work?



Legend: - - - - Set Temperature ———— Cooling Power

Note: Set temperature on remote control display remains unchanged.



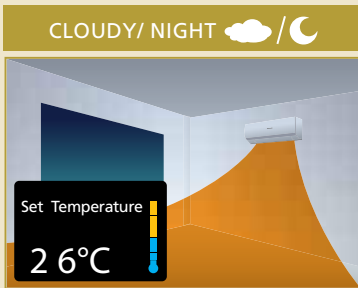
Legend: - - - - Set Temperature ———— Cooling Power

Note: Set temperature on remote control display remains unchanged.

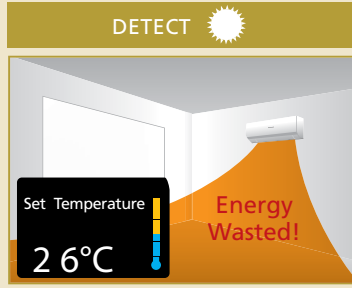


NEW SUNLIGHT DETECTION (HEATING)

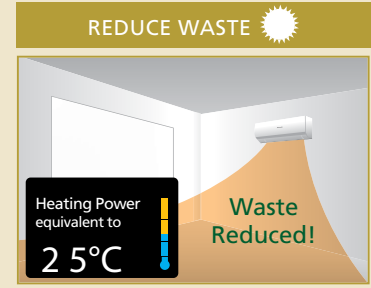
ECONAVI detects changes in sunlight intensity in the room and judges whether it is sunny or cloudy/daytime or night-time. It reduces the waste of heating under more sunlight conditions.



ECONAVI is switched on when it is CLOUDY/NIGHT.



ECONAVI detects less heating power is required.

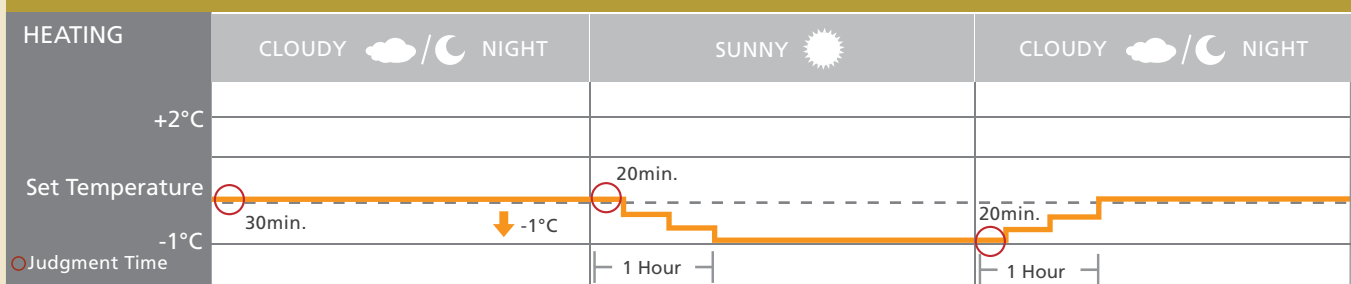


Set temperature remain unchanged. ECONAVI reduces heating power by an amount equivalent to decreasing the set temperature by 1 degree Celsius.

When weather changes from cloudy to sunny or night-time to daytime, ECONAVI detects more sunlight intensity and determines less heating power is required. If heating power remains the same, energy will be wasted. ECONAVI detects this waste and reduces heating power by an amount equivalent to decreasing the set temperature by 1 degree Celsius.

How does ECONAVI Sunlight (heating) Sensor work?

CLOUDY / NIGHT when ECONAVI (heating) is switched on



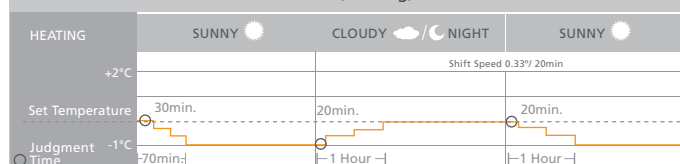
Legend: ----- Set Temperature ——— Heating Power

Note: Set temperature on remote control display remains unchanged.

Note:

When ECONAVI is switched on during sunny day, sunlight sensor will initialise sunlight intensity for 30 min. If judgments is Sunny, the sensor will reduce heating power by an amount equivalent to decreasing set temperature by 1 degree Celsius.

SUNNY when ECONAVI (heating) is switched on



Legend: ----- Set Temperature ——— Heating Power

Note: Set temperature on remote control display remains unchanged.

* Heating operation applicable for E-model only.



HUMAN ACTIVITY DETECTION

Area Search

ECONAVI detects human movements and reduces the waste of cooling the unoccupied area of the room.



Only one person in the room. Detects wasted cooling area.



Reduces cooling the unoccupied area of the room.

Activity Detection

ECONAVI detects changes in activity levels and reduces the waste of cooling with unnecessary power.



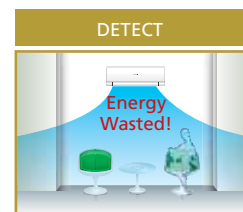
Level of activity is decreased. Detects low activity.



Reduces cooling power by an amount equivalent to increasing the set temperature by 1 degree Celsius.

Absence Detection

ECONAVI detects human absence in the room and reduces the waste of cooling an empty room.

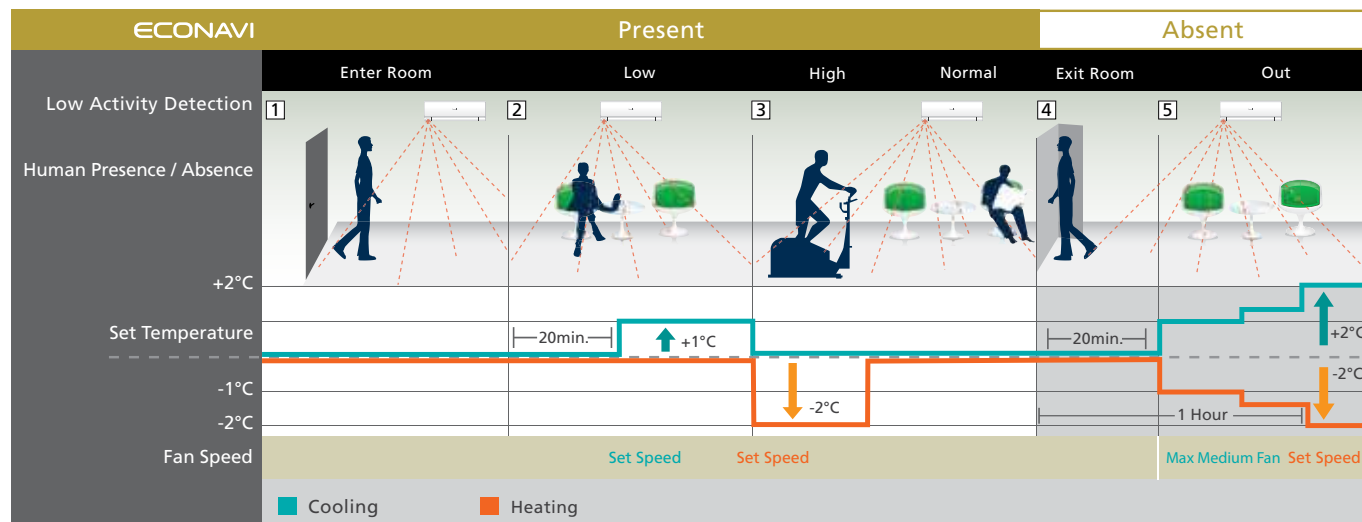


No one is in the room. Detects absence.



Gradually reduces cooling power by an amount equivalent to increasing the set temperature by 2 degrees Celsius.

How does ECONAVI Human Activity Detection work?



Legend: - - - Set Temperature — Cooling Power — Heating Power

Note: Set temperature on remote control display remains unchanged

AUTOCOMFORT PROVIDES COMFORT

AUTOCOMFORT is used to provide comfort. High Activity Detection detects when the level of activity increases, and automatically increases cooling power by an amount equivalent to decreasing the set temperature by 1 degree Celsius to improve comfort. This is explained in the following scenario:

High Activity Detection

ECONAVI High Activity Detection can detect changes in activity levels to adjust cooling power to improve comfort.

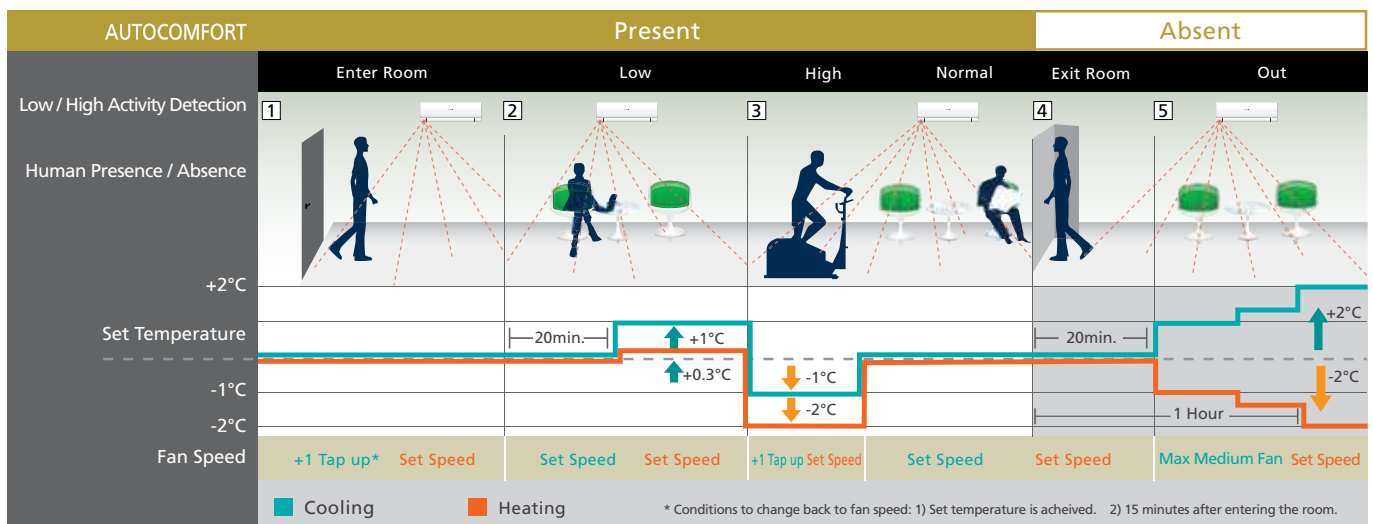


Level of activity increased. Detects high activity.



Increases cooling power by an amount equivalent to decreasing the set temperature by 1 degree Celsius.

How does AUTOCOMFORT High Activity Detection work?



Legend: - - - - Set Temperature ———— Cooling Power ———— Heating Power

Note: Set temperature on remote control display remains unchanged.

Note:

AUTOCOMFORT consumes more energy during high activity level.

Tips on how to select ECONAVI or AUTOCOMFORT :

- ECONAVI - To enjoy energy savings.
- AUTOCOMFORT - To enjoy comfort or energy savings depending on the situation.

ECONAVI INTELLIGENT SENSORS

ECONAVI Intelligent Sensors are able to monitor sunlight intensity, human movements, activity levels and human absence to detect any waste of energy and automatically adjust cooling power to save energy efficiently with uninterrupted cooling comfort and convenience.

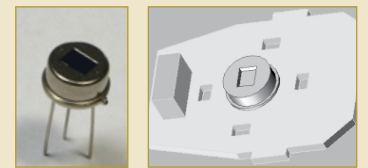
■ Sunlight Sensor

Detects changes in Sunlight Intensity



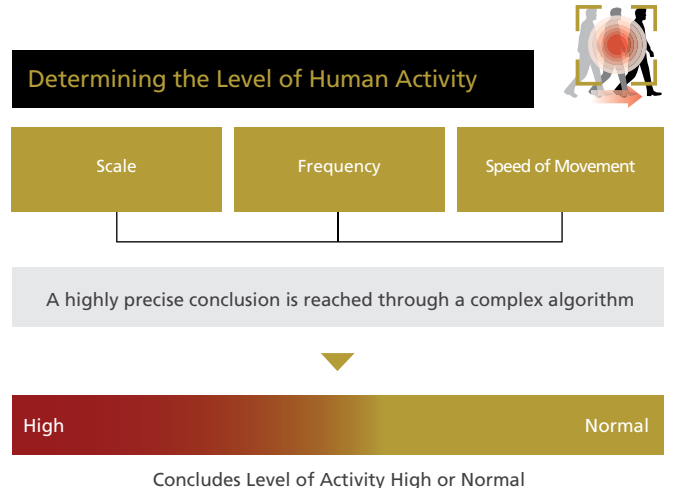
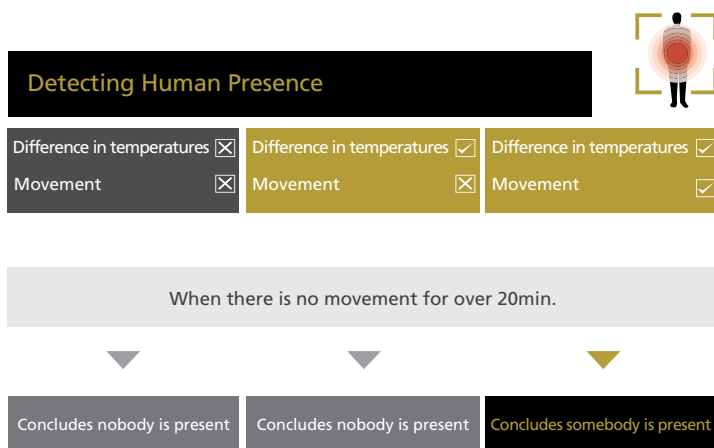
■ Human Activity Sensor

Detects human movements, changes in activity levels and human absence.



HIGH-PRECISION SENSING

All objects emit infrared rays which, although invisible, can be detected as heat by ECONAVI's Human Activity 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

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



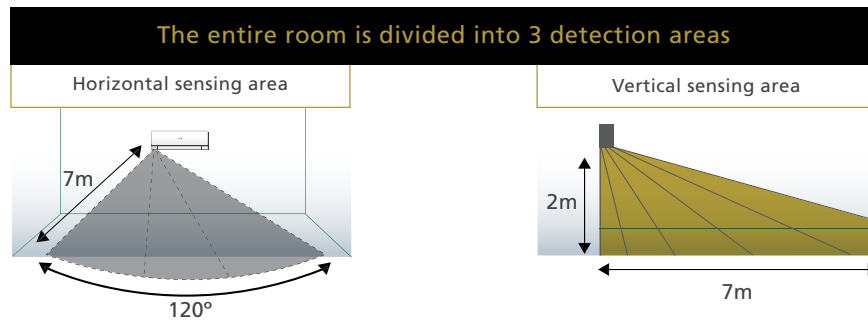
Concludes it is not human

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.

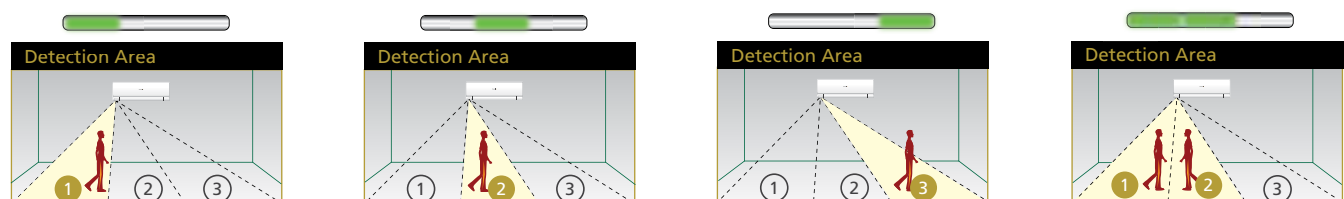
COVERAGE CAPABILITIES

Human Activity Sensor covers a wider area due to its improved area detection function.



SENSOR DETECTION PRINCIPLE

Human Activity Sensor detects human activity level and directs airflow to occupied or high activity zone. LED indicators indicating ECONAVI is detecting and functioning.



Note: When detecting any change in movements, there will be a time delay between the LED indicator lighting up and a change of airflow direction. This is to avoid over-sensitive louvre movements which will not contribute to energy savings.

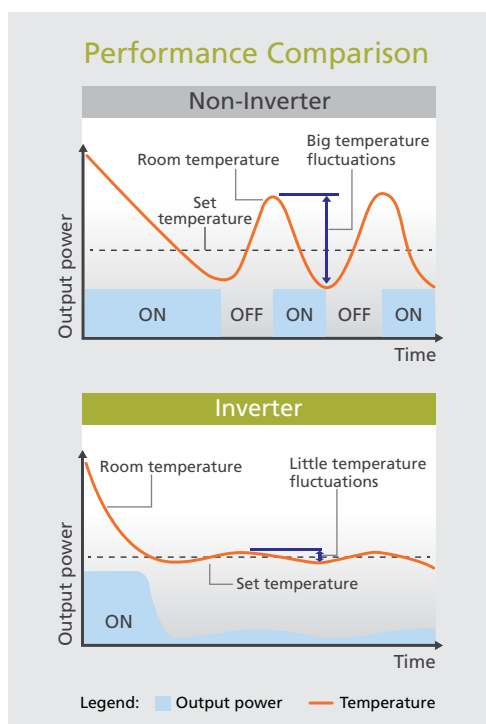


EXCEPTIONAL ENERGY-SAVING PERFORMANCE

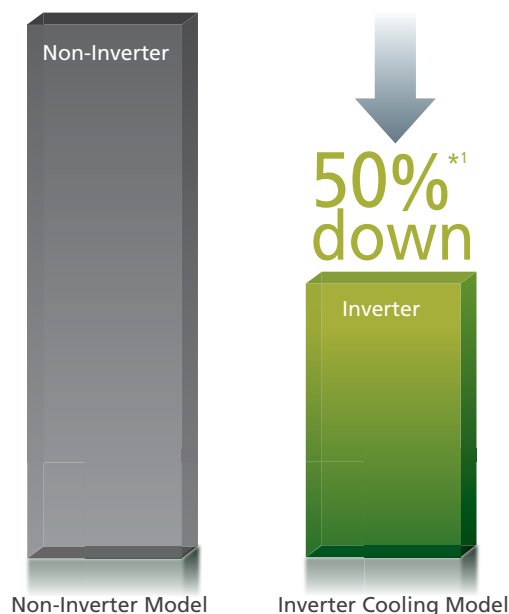
■ Reduces Electricity Consumption

Panasonic Inverter air conditioners are designed to give you exceptional energy saving performance while ensuring you stay comfortable at all times. At the start up of an air conditioner's operation, powerful operation is required to reach the set temperature. After the set temperature is reached, less power is required to maintain it. A conventional non-Inverter air conditioner can only operate at a constant speed which is too powerful to maintain the set temperature. Thus, in attempting to achieve this, it switches the compressor ON and OFF repeatedly. This results in wider temperature fluctuations leading to wasteful consumption of energy. Panasonic Inverter air conditioners vary the rotation speed of the compressor. This provides a highly precise method of maintaining the set temperature.

Unlike a conventional non-Inverter air conditioner which consumes a lot of energy, Panasonic Inverter air conditioner reduces wasteful operation - giving you energy savings of up to 50%*1 on cooling mode.



Electricity Consumption Comparison



During Cooling

Up To
50%*1
ENERGY SAVINGS

***1 Comparison of 3.5kW Inverter model and 3.5kW Non-Inverter model (Cooling)**

Outside temperature: 35°C/24°C,
Remote setting temperature: 25°C with Fan speed (High)
Vertical Airflow direction: Auto, Horizontal Airflow direction: Front

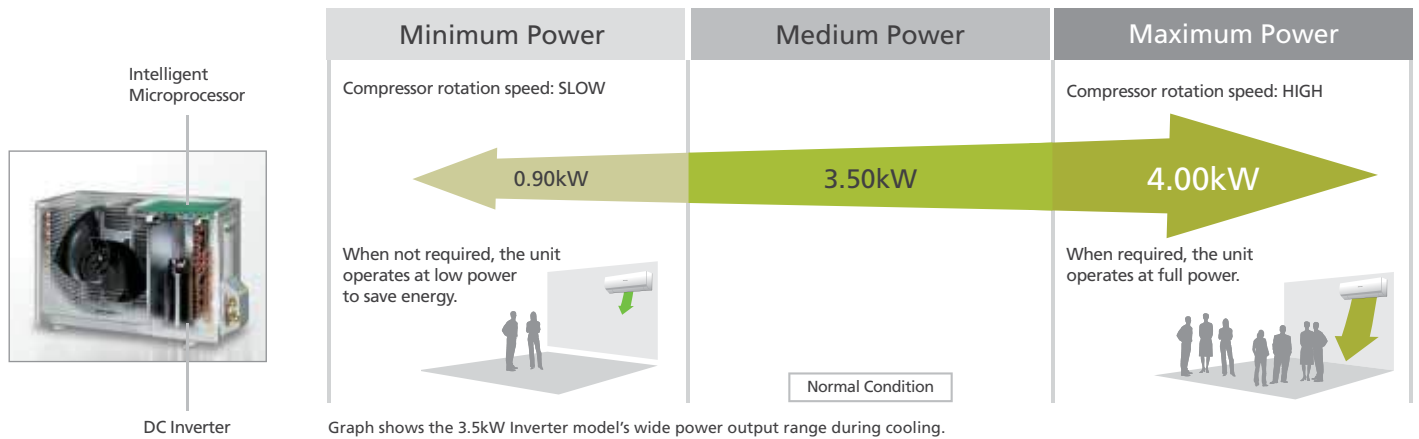
Total power consumption amount is measured for 8 hours from starting.
At Panasonic Amenity Room (size:16.6m²)

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

THE OTHER ADVANTAGES OF PANASONIC INVERTER AIR CONDITIONERS

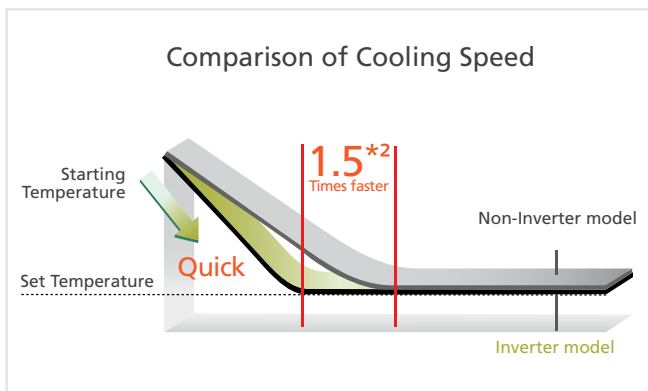
■ Constant Comfort

Precise temperature control with a wide power output range enables an Inverter air conditioner to meet different room occupancy levels – thus ensuring constant comfort.

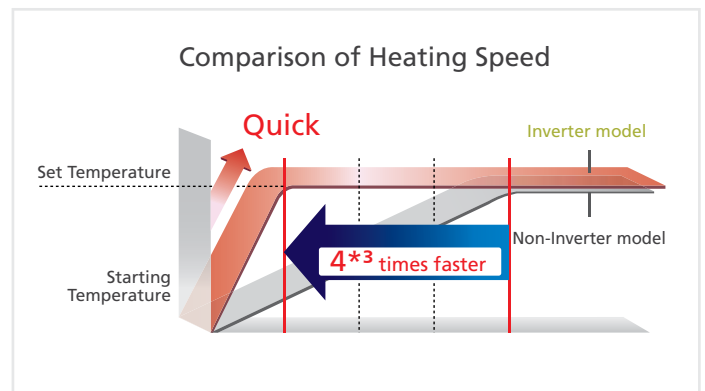


■ Quick Comfort

Panasonic Inverter air conditioners can operate with higher power during the start-up period to cool the room 1.5 times faster and heat the room 4 times faster than non-Inverter models.



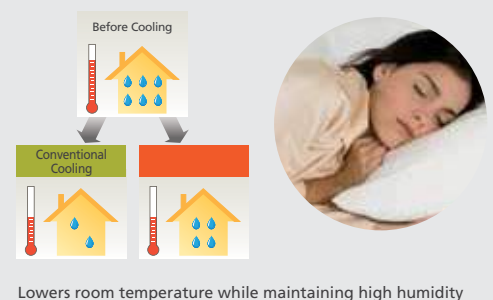
*2 3.5kW Inverter vs. non-Inverter. Outside room temperature: 35°C; setting temperature: 25°C



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

■ Mild Dry Cooling

Mild dry cooling maintains a higher level of relative humidity of up to 10% compared to regular cooling operation. This helps to reduce skin dryness and dry throat. Ideal when sleeping with the air conditioner on.

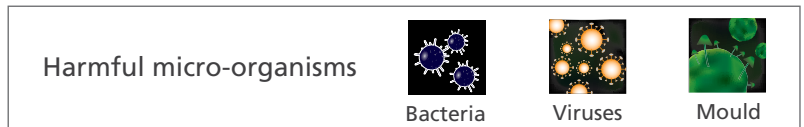
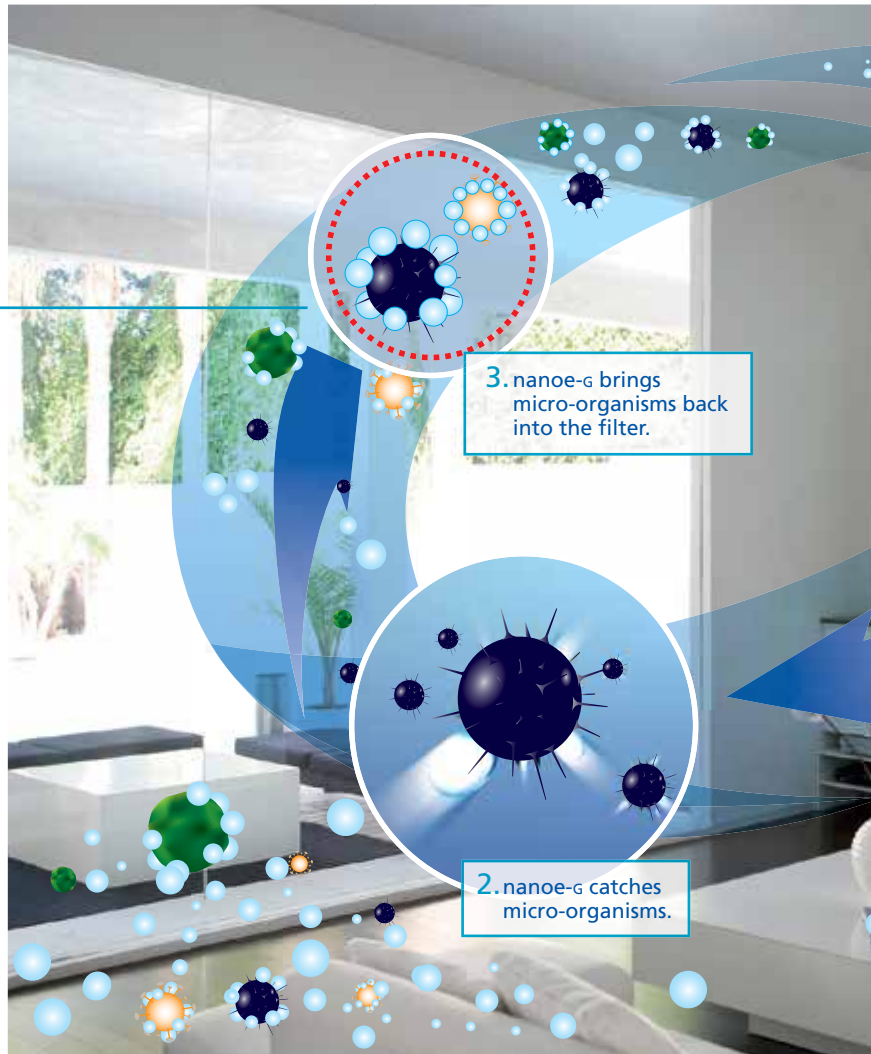
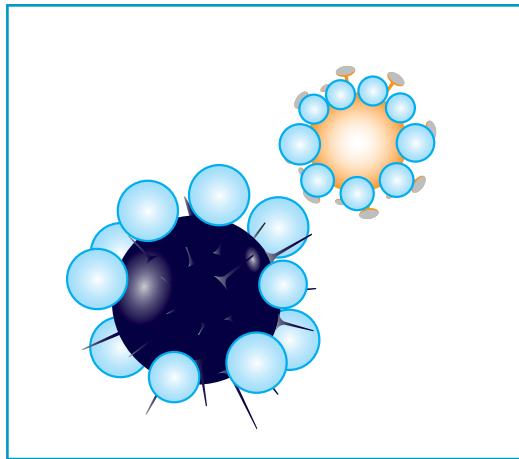




Panasonic air conditioners now come with a new air purifying system called nanoe-G which utilises nano technology fine particles consisting of ions and radicals to purify the air in the room. It works effectively on both airborne and surface based micro-organisms such as bacteria, viruses and mould thus ensuring a cleaner living environment.

AIRBORNE

nanoe-G is able to remove 99%*1 of bacteria, viruses and mould in the air.



The effectiveness of **nanoe-G**

AIRBORNE

Removes **99%*1** BACTERIA, VIRUSES and MOULD

*1 Airborne Removal was certified by Kitasato Research Center for Environmental Science

- KRCS-Bio. Test Report no. : 23_0182
Bacteria : *Staphylococcus aureus* (NBRC 12732)
- KRCS-Env. Test Report no. : 22_0008
Virus : *Escherichia coli* phage (oX-174 ATCC 13706-B1)
: Influenza (H1N1) 2009 virus
- KRCS-Env. Test Report no. : 23_0140
Mould : *Penicillium pinophilum* (NBRC 6345)

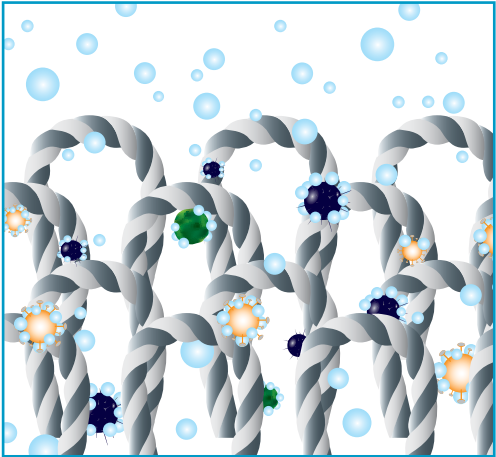
**All results are based on specific testing conditions.
All tests are not demonstrated under actual usage situation.**



1. 3 trillion*³ nano-e-G fine particles released from the generator.

SURFACE BASED

nanoe-G is able to deactivate 99%*² of adhesive micro-organisms such as bacteria, viruses and inhibits mould growth on surfaces and fabrics.



*³ 3 trillion is the simulated number of nano-e-G fine particles under the mentioned conditions. Actual measured nano-e-G fine particles at the centre of the room (13m²):100k/cc calculated number of nano-e-G fine particles in the entire room assuming they are evenly distributed.

**All results are based on specific testing conditions.
All tests are not demonstrated under actual usage situation.**

** Adhesive Deactivation was certified by Japan Food Research Laboratories

- Test Report no. : 11047933001-02
Bacteria : *Staphylococcus aureus* (NBRC 12732)
- Test Report no. : 11073649001-02
Virus : Bacteriophage (Phi X 174 NBRC 103405)
- Test Report no. : 11047937001-02
Mould : *Cladosporium cladosporioides* (NBRC 6348)

**All results are based on specific testing conditions.
All tests are not demonstrated under actual usage situation.**

Deactivates

99%^{*2}

BACTERIA and VIRUSES

Inhibits MOULD Growth

ADHESIVE

The effectiveness of nanoe-G air purifying technology has been certified and proven by Kitasato Research Centre for Environmental Science and Japan Food Research Laboratories. The test reports listed below illustrate validation data for the nanoe-G air purifying system.

TESTING INSTITUTE: KITASATO RESEARCH CENTRE FOR ENVIRONMENTAL SCIENCE

Category	Target Substance	Substance Name	Effectiveness	Test Report no	Method	Result
AIRBORNE	Bacteria	<i>Staphylococcus aureus</i> (NBRC 12732)	99%	KRCES-Bio. Test Report No. 23_0182	The AC with nanoe-G was operated in a test room (25m ³) and aerosol was collected and bacterial count was calculated.	99% removal from the air after 150 minutes of operation
	Virus	<i>Escherichia coli</i> phage (oX-174 ATCC 13706-B1)	99%	KRCES-Env. Test Report No. 22_0008	The AC with nanoe-G was operated in a test room (25m ³) and airborne phages were collected and phage count of the collected air was calculated.	99% removal from the air after 120 minutes of operation
			99%	KRCES-Env. Test Report No. 22_0008	nanoe-G was operated in a test chamber (200 Litre) and the phages were collected and phage count of the collected air was calculated.	99% removal from the air after 5 minutes of operation
	Virus	Influenza (H1N1) 2009 virus	99%	KRCES-Env. Test Report No. 22_0008	nanoe-G was operated in a test chamber (200 Litre) and the influenza viruses were collected and the virus titers were calculated by the Reed and Muench method.	99% removal from the air after 5 minutes of operation
					In view of health hazard associated with spatial distribution of Influenza (H1N1) 2009 virus, nanoe-G removal effectiveness cannot be tested in large test room (25m ³). When tested in 200 Litre chamber, nanoe-G was able to decrease Influenza (H1N1) 2009 virus (99%) when it was operated for 5 minutes. Additionally when tested in larger test room (25m ³), nanoe-G can remove 99.5% of Coli phage virus when operated for 120 minutes. It was validated that evaluation on the influenza virus could be speculated from the results on the phage according to the test results in a 200 Litre test chamber. It appeared that the air-conditioners in a larger test room (25m ³) would be able to remove the influenza virus as effectively as the phage.	
Mould	<i>Penicillium pinophilum</i> (NBRC 6345)	99%	KRCES-Bio. Test Report No. 23_0140	The AC with nanoe-G was operated in a test room (25m ³) and aerosol was collected and fungal spores count was calculated.	99% removal from the air after 90 minutes of operation	

Remark: All results are based on specific testing conditions. All tests are not demonstrated under actual usage situation.

TESTING INSTITUTE: JAPAN FOOD RESEARCH LABORATORIES

Category	Target Substance	Substance Name	Effectiveness	Test Report no	Method	Result
ADHESIVE	Bacteria	<i>Staphylococcus aureus</i> (NBRC 12732)	99%	Test Report No. 11047933001-02	The AC with nanoe-G was operated in a test space (10m ³) and viable cells were counted by pour plate method.	99% inactivation after 24 hour operation of nanoe-G (compared to the original condition/ventilation mode).
	Virus	Bacteriophage (Phi X 174 NBRC 103405)	99%	Test Report No. 11073649001-02	nanoe-G was operated in a test box (90 Litre) and phage infectivity titer was determined by plaque technique.	99% inactivation after 120 minutes operation of nanoe-G (compared to non-operation)
	Mould	<i>Cladosporium cladosporioides</i> (NBRC 6348)	Inhibit Mould Growth	Test Report No. 11047937001-02	nanoe-G was operated in a test box (1m ³) and colonies on the plate were counted.	The growth of the subject was inhibited. (>85% after 7 days)

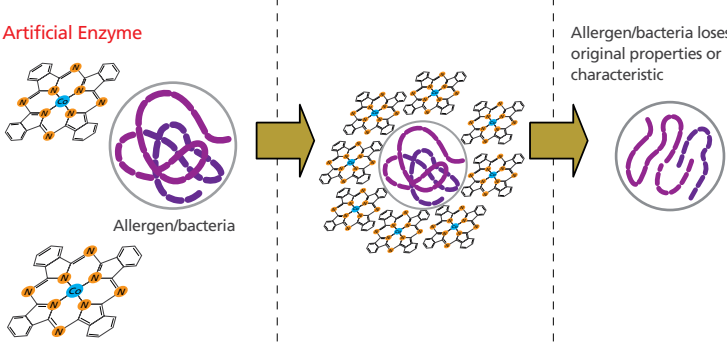
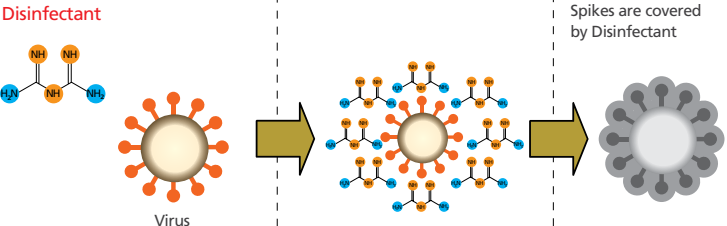
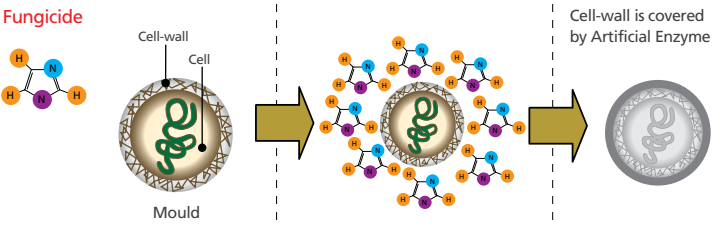
Remark: All results are based on specific testing conditions. All tests are not demonstrated under actual usage situation.

CLEANER AIR

■ Anti-Bacterial Filter

The Anti-Bacterial Filter combines three effects in one: anti-bacterial, anti-virus and anti-allergen protection to provide clean air.

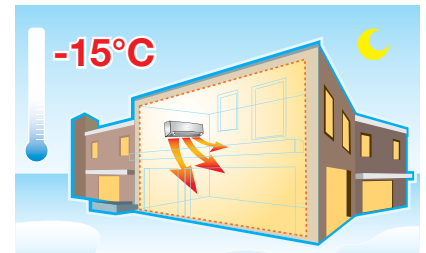
How anti-bacterial filter works

Effectiveness	Target Substance and Substance name	Mechanism
<p>DEACTIVATES</p> <p>99%</p> <p>of filter-captured Allergens*³ and Bacteria*¹</p>	<p>Anti-allergen</p> <p>*³ Allergen deactivation was certified by Shinshu University. Test Report No: Allergen: Cider Pollen Allergen Cry j1</p>	<p>Artificial Enzyme</p>  <p>Allergen/bacteria</p> <p>The allergen/bacteria is caught by the filter.</p> <p>Artificial Enzyme will 'denature' the filter-captured allergen/bacteria.</p> <p>'Denatured' allergen/bacteria will no longer keep its original property as allergen/bacteria; therefore, it is harmless.</p> <p>Allergen/bacteria loses original properties or characteristic</p>
	<p>Anti-bacterial</p> <p>*¹ Bacteria deactivation was certified by Boken Quality Evaluation Institute. Test Report No: 10042459-1 and 10042459-2 Bacteria: <i>Staphylococcus aureus</i> NBRC 12732 : <i>Escherichia coli</i> NBRC 3972</p>	
<p>DEACTIVATES</p> <p>99%</p> <p>of filter-captured Viruses*²</p>	<p>Anti-virus</p> <p>*² Virus deactivation was certified by Osaka Prefectural Institute of Public Health. Test Report No: 313360397 Virus: Influenza (H3N2) A/Hong Kong</p>	<p>Disinfectant</p>  <p>Virus</p> <p>The virus is caught by the filter.</p> <p>Disinfectant will attach to surface protein of virus.</p> <p>Spikes are covered by Disinfectant</p> <p>Virus becomes inactive through 'tanning effect' making them harmless.</p>
<p>INHIBITS</p> <p>Mould *⁴ Growth</p>	<p>Anti-mould</p> <p>*⁴ Certified by Boken Quality Evaluation Institute. Test Report No: 000366-3 Mould: <i>Aspergillus niger</i> ATCC 6275</p>	<p>Fungicide</p>  <p>Cell-wall Cell</p> <p>Mould</p> <p>The mould is caught by the filter.</p> <p>Fungicide will attach to surface protein of mould.</p> <p>Cell-wall is covered by Artificial Enzyme</p> <p>Mould becomes inactive through 'tanning effect' making them harmless.</p>

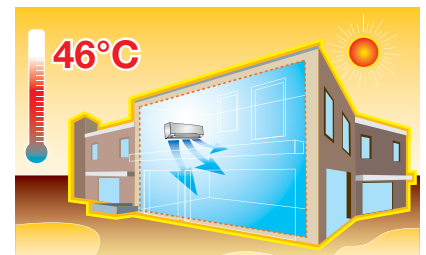
WIDE OPERATING TEMPERATURE RANGE

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 from -15°C to 24°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.

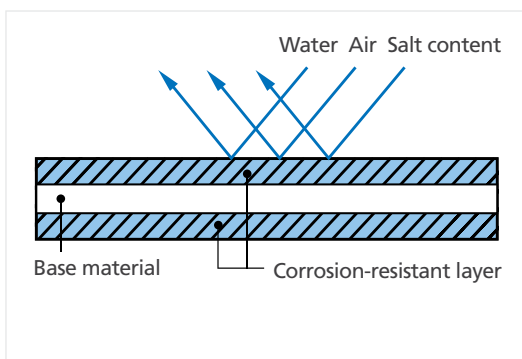


BLUE FIN CONDENSER

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 expand 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

		Non Blue Fins	
	Front View		
	Side View		

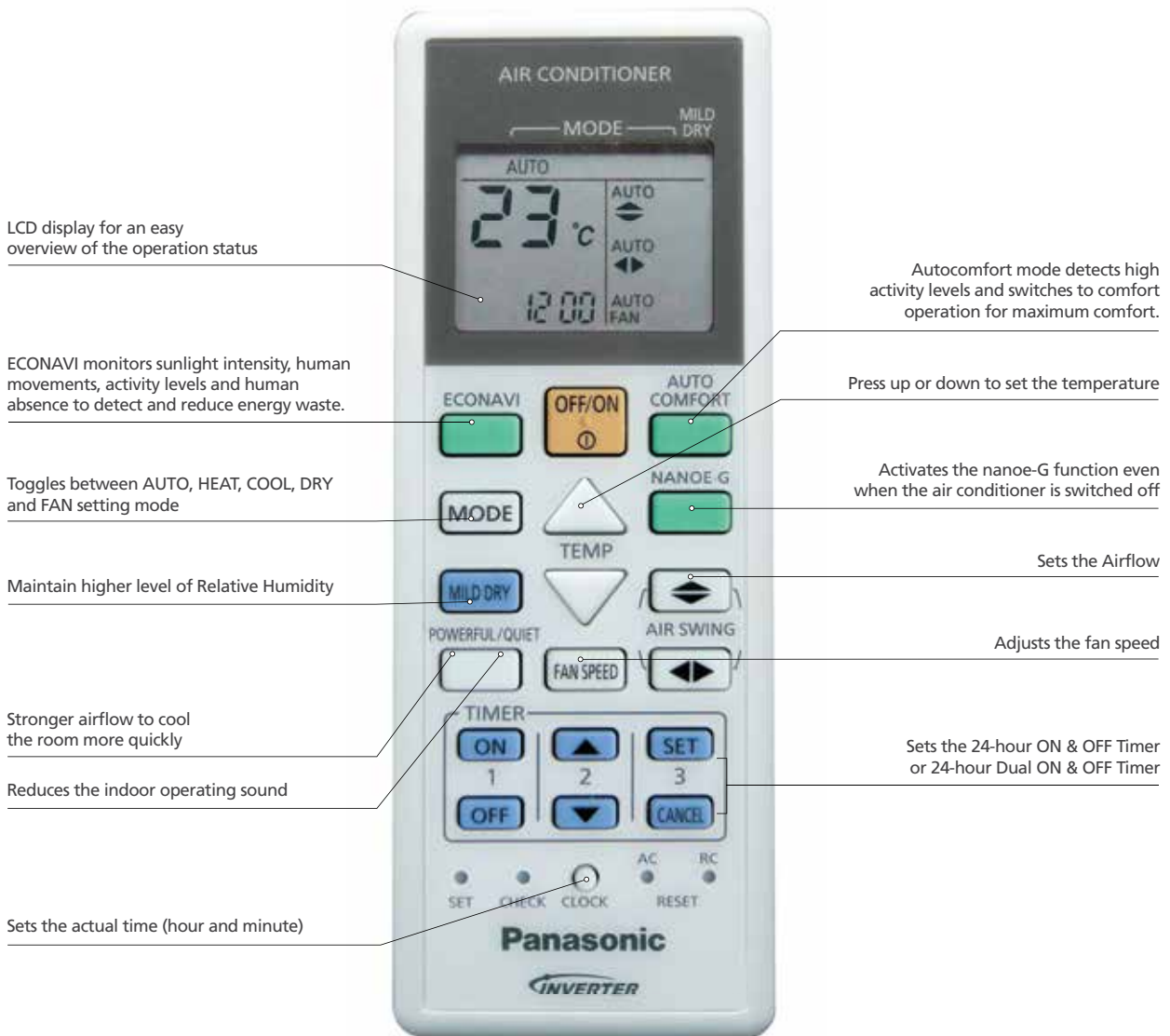
Test Proven Longer Durability
Panasonic's condenser has special coating assures longer condenser life for years of reliable comfort.

Note: According to Panasonic test results.

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.



Wireless
Applicable to ECONAVI Reverse Cycle Models

QUIET OPERATION



INDUSTRY-LEADING QUIET OPERATION FOR MORE COMFORT

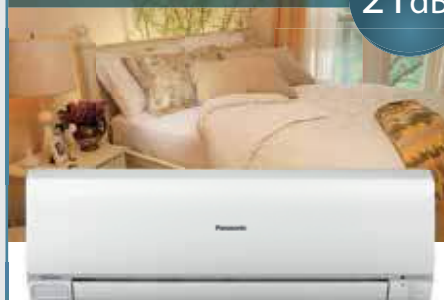
■ Quiet Mode

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.

Indoor unit

21dB*



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

* CS-E9NKR: during cooling/heating operation, CS-E12NKR: during cooling operation with low fan speed in the Quiet Mode.

Outdoor unit





-5dB*¹



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 NKR: In the Quiet Mode during cooling/heating operation with low fan speed

MODEL LINE-UP

Capacity (kW)	2.5-4.5 (kW)	5.0-8.0 (kW)	Features
Single Inverter Split ECONAVI Reverse Cycle	 Page 24 – 25 CS-E9NKR (2.6kW) (CU-E9NKR) CS-E12NKR (3.5kW) (CU-E12NKR) CS-E15NKR (4.4kW) (CU-E15NKR)	Heating Cooling CS-E18NKR (5.0kW) (CU-E18NKR) CS-E21NKR (6.3kW) (CU-E21NKR) CS-E24NKR (7.1kW) (CU-E24NKR) CS-E28NKR (8.0kW) (CU-E28NKR)	ECONAVI nanoe-G DEMAND CONTROL MILD Dry Cooling 24 DUAL Blue Fin Condenser Large Remote Controller Heating Possible -15°C Cooling Possible 46°C Quiet Mode (Cooling) (Indoor): 21dB (E9NKR), 26dB (E12NKR), 27dB (E15NKR), 29dB (E18NKR), 32dB (E21NKR), 34dB (E24NKR), 35dB (E28NKR) Quiet Mode (Cooling) (Outdoor): 41dB (E9NKR), 42dB (E12NKR), 47dB (E15NKR), 48dB (E18NKR)
	 Page 24 – 25	Heating Cooling CS-E18NKR (5.0kW) (CU-E18NKR) CS-E21NKR (6.3kW) (CU-E21NKR) CS-E24NKR (7.1kW) (CU-E24NKR) CS-E28NKR (8.0kW) (CU-E28NKR)	Heating Possible -15°C Cooling Possible 46°C Quiet Mode (Cooling) (Indoor): 21dB (E18NKR), 26dB (E21NKR), 27dB (E24NKR), 29dB (E28NKR) Quiet Mode (Cooling) (Outdoor): 41dB (E18NKR), 42dB (E21NKR), 47dB (E24NKR), 48dB (E28NKR)
Deluxe Cooling	 Page 26 – 27 CS-S9NKR (2.6kW) (CU-S9NKR) CS-S12NKR (3.5kW) (CU-S12NKR)	CS-S18NKR (5.0kW) (CU-S18NKR) CS-S24NKR (7.1kW) (CU-S24NKR) CS-S28NKR (8.0kW) (CU-S28NKR)	Cooling DEMAND CONTROL 24 DUAL Blue Fin Condenser Large Remote Controller Cooling Possible 46°C Quiet Mode (Cooling) (Indoor): 21dB (S9/S12NKR), 31dB (S18NKR), 35dB (S24/S28NKR) Quiet Mode (Cooling) (Outdoor): 42dB (S9/S12NKR), 47dB (S18NKR), 49dB (S24/S28NKR)
	 Page 26 – 27	CS-S18NKR (5.0kW) (CU-S18NKR) CS-S24NKR (7.1kW) (CU-S24NKR) CS-S28NKR (8.0kW) (CU-S28NKR)	Cooling Possible 46°C Quiet Mode (Cooling) (Indoor): 21dB (S18NKR), 31dB (S24NKR), 35dB (S28NKR) Quiet Mode (Cooling) (Outdoor): 42dB (S18NKR), 47dB (S24NKR), 49dB (S28NKR)

(): Outdoor Unit

ECONAVI	AUTOCOMFORT	nanoe-G	Mild Dry Cooling	Economy Mode	Demand Control
24-Hour Dual ON/OFF Real Setting Timer	Quiet Mode (Cooling) (Indoor)	Quiet Mode (Cooling) (Outdoor)	Anti-Bacterial Filter	Blue Fin Condenser	Large Remote Controller
Wired Remote Controller (Optional)	Wireless Blacklit Remote Controller (Optional)	Star Rating (Heating)	Star Rating (Cooling)	Heating Operation Lower Limit	Cooling Operation Higher Limit

Feature Comparison >> p.28~p.29



INTELLIGENT ECO SENSORS



ECONAVI features an energy-saving, intelligent Human Activity Sensor and new Sunlight Sensor technologies that can detect and reduce waste by optimising air conditioner operation according to room conditions.

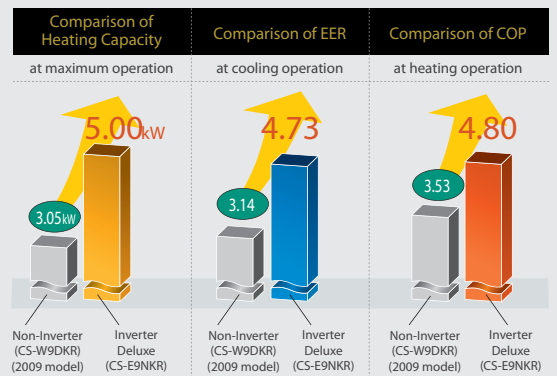


nanoe-g utilises nano-technology fine particles to purify the air in the room. It works effectively on both airborne and surface based micro-organisms such as bacteria, viruses and mould thus ensuring a cleaner living environment.



INDUSTRY-TOP 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.



ECONAVI	AUTOCOMFORT	nanoe-G				MILD
mode			FAN MODE			
24 DUAL	DEMAND CONTROL	3RD PARTY CONNECTIVITY	(Large)	(Optional)	BLACKLIT (Optional)	
32 (Random)	15m (E9/E12/E15)	20m (E18/E21)	30m (E24/E28)			



CS-E9NKR | CS-E12NKR | CS-E15NKR

Heating Possible -15°C | Cooling Possible 46°C

21dB E9NKR (21dB) | 26dB E12NKR (21dB) | 27dB E15NKR (23dB)

41dB E15NKR (41dB)

Star Rating: 4 1/2, 3, 2 1/2

CS-E9NKR | CS-E12NKR | CS-E15NKR



CS-E18NKR | CS-E21NKR | CS-E24NKR | CS-E28NKR

Heating Possible -15°C | Cooling Possible 46°C

29dB E18NKR (31dB) | 32dB E21NKR (33dB) | 34dB E24NKR (34dB) | 35dB E28NKR (35dB)

42dB E18NKR (42dB) | 47dB E21NKR (47dB) | 48dB E24NKR (48dB)

Star Rating: 2 1/2, 2, 2

CS-E18NKR | CS-E21NKR | CS-E24NKR | CS-E28NKR

SPECIFICATIONS

Model	(50Hz)	CS-E9NKR (CU-E9NKR)		CS-E12NKR (CU-E12NKR)		CS-E15NKR (CU-E15NKR)		CS-E18NKR (CU-E18NKR)		CS-E21NKR (CU-E21NKR)		CS-E24NKR (CU-E24NKR)		CS-E28NKR (CU-E28NKR)	
		Cooling Capacity	kw	Btu/h	EER	Heating Capacity*1	kw	Btu/h	COP	Star Rating	Electrical Data	Voltage	Running Current	Power Input	kw
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)
Cooling Capacity	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	w/w	4.73		4.22		3.67		3.85		3.50		3.36		3.35	
Heating Capacity*1	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)
Heating Capacity*1	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	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 0.75 (0.175~1.23)	0.83 1.22 (0.175~1.89)	1.20 1.47 (0.245~2.25)	1.30 1.69 (0.26~2.65)	1.80 1.98 (0.40~2.50)	2.11 2.21 (0.38~3.00)	2.39 2.63 (0.50~3.30)						
Noise	Sound Pressure Level*2	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						
	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						
Humidity Removal	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 214	290 x 870 x 214	290 x 870 x 214	290 x 1070 x 240	290 x 1070 x 240	290 x 1070 x 240	290 x 1070 x 240							
	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	5~46/-15~24	5~46/-15~24	5~46/-15~24							

*1 Maximum heating capacities shown are the values based on powerful operation.

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

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.

OUTDOOR



**CU-E9NKR
CU-E12NKR**



**CU-E15NKR
CU-E18NKR
CU-E21NKR
CU-E24NKR**



CU-E28NKR



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



Clean, Comfortable Air and Energy Saving Performance

ANTI-BACTERIAL FILTER

The Anti-Bacterial Filter combines three effects in one: anti-allergen, anti-virus and anti-bacterial protection to provide clean air.

ECONOMY MODE

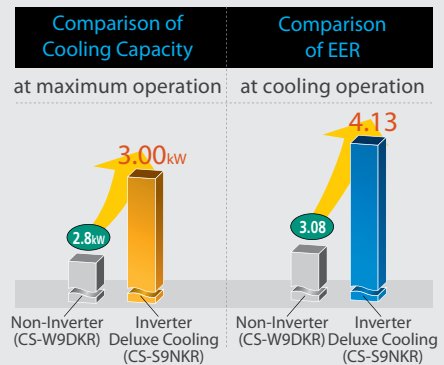
The Economy mode reduces energy consumption by up to 20%* compared to the Normal mode by automatically adjusting the set temperature by up to 2°C. It's ideal when you want to maintain room temperature for gentle cooling.


























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

HIGHEST ENERGY SAVING RATING ACHIEVED BY INVERTER TECHNOLOGY

Panasonic's high-efficiency technologies clear stringent energy-saving standards. Our new deluxe cooling models have attained Energy - Efficiency Rating 3 Star, which places them as one 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.

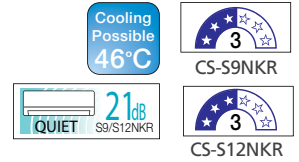


				 mode				FAN MODE
 (S9/S12)	 (S18/S24/S28)	 (S9/S12)		 24 DUAL	DEMAND CONTROL	3RD PARTY CONNECTIVITY	 (Large)	 (Optional)
	 32 (Random)	 15m (S9/S12)	 20m (S18)	 30m (S24/S28)				



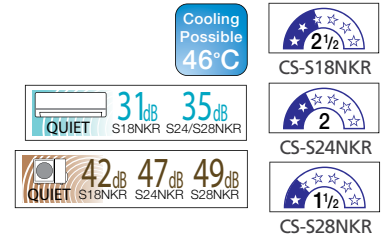
Wireless Large Remote Controller

CS-S9NKR | CS-S12NKR



Wireless Large Remote Controller

CS-S18NKR | CS-S24NKR | CS-S28NKR



SPECIFICATIONS

Model		(50Hz)	CS-S9NKR (CU-S9NKR)	CS-S12NKR (CU-S12NKR)	CS-S18NKR (CU-S18NKR)	CS-S24NKR (CU-S24NKR)	CS-S28NKR (CU-S28NKR)	
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*1	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
Humidity Removal	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	290 x 870 x 214	290 x 870 x 214	290 x 1070 x 240	290 x 1070 x 240	290 x 1070 x 240	
	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	
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	5~46	16~46	

*1 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.

OUTDOOR



**CU-S9NKR
CU-S12NKR**



**CU-S18NKR
CU-S24NKR
CU-S28NKR**







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



Split Type

Cleaner Air		nanoe-g	
		Anti-Bacterial Filter	
		Odour-Removing Function	
		Removable, Washable Panel	
Comfort		ECONAVI	
		AUTOCOMFORT	
		Inverter Control	
		Mild Dry Cooling	
		Quiet Mode	Indoor Outdoor
		Powerful Mode	
		Economy Mode	
		Heating Operation Lower Limit	
		Cooling Operation Upper Limit	
		Soft Dry Operation Mode	
		Fan Mode	
		Remote Airflow Control (All Directions)	
		Remote Airflow Control (Up & Down)	
		Manual Horizontal Airflow Direction Control	
		Auto Changeover (Inverter)	
		Automatic Operation Mode	
		Hot Start Control	
Convenience		24-Hour Dual ON / OFF Real Setting Timer	
		Demand Control Ready	
		3rd Party Connectivity	
		LCD Wireless Remote Controller	
		Wired Remote Controller	
	Wireless Blacklit Remote Controller		
Reliability		Blue Fin Condenser	
		Random Auto Restart (32 Restart Patterns)	
		Long Piping	
		Plug Type & Ampere Capacity *The plug must be installed.	
		Top-Panel Maintenance Access	
	Self-Diagnostic Function		

ECONAVI Reverse Cycle		Deluxe Cooling	
Single Inverter Split			
CS-E9NKR CS-E12NKR CS-E15NKR	CS-E18NKR CS-E21NKR CS-E24NKR CS-E28NKR	CS-S9NKR CS-S12NKR	CS-S18NKR CS-S24NKR CS-S28NKR
			
•	•		
•	•	•	•
•	•	•	•
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•	•	•	•
•	•	•	•
•	•	•	•
• (E15)	•	•	•
•	•	•	•
		•	•
-15°C	-15°C		
46°C	46°C	46°C	46°C
•	•	•	•
•	•	•	•
•	•	•	•
		•	
		•	
•	•	•	•
•	•		
•	•	•	•
•	•	•	•
•	•	•	•
• (Large)	• (Large)	• (Large)	• (Large)
• (Optional)	• (Optional)	• (Optional)	• (Optional)
• (Optional)	• (Optional)		
•	•	•	•
•	•	•	•
15m	20m(E18/E21) 30m(E24/E28)	15m	20m(S18) 30m(S24/S28)
Outdoor Power Supply	Outdoor Power Supply	Outdoor Power Supply	Outdoor Power Supply
•	•	•	•
•	•	•	•

Cleaner Air

nanoe-G

nanoe-G works effectively on airborne and surface-based micro-organisms such as bacteria, viruses and mould ensuring a cleaner living environment.

» see page 16 – 18



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.



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.



Anti-Bacterial Filter

The Anti-Bacterial Filter combines three effects in one: anti-allergen, anti-virus and anti-bacterial protection to provide clean air.

» see page 19



Comfort

ECONAVI

Detects and reduces waste for more energy savings.

» see page 6 – 13



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.



Fan Mode



AUTOCOMFORT

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

» see page 11



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 DB 35°C/ WB 24°C and set temperature of 25°C (cooling operation).



Remote Airflow Control

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



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.

» see page 14 – 15



Remote Airflow Control (Up & Down)



Manual Horizontal Airflow Direction Control



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.

*RH: Relative Humidity
» see page 15



Heating Operation Lower 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.

» see page 20



Auto Changeover (Inverter)

Change automatically from cooling to heating to maintain the desired temperature of the room.



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.



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.

» see page 20



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.



Not all features found on all models.

Convenience

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

Demand Response Management (DRM) Ready



LCD Wireless Remote Controller



3rd Party Connectivity



Wired Remote Controller (Available as an Optional Accessory)



Wireless Blacklit Remote Controller (Available as an Optional Accessory)



Reliability

Blue Fin Condenser

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

» see page 20



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.



Self-Diagnostic Function

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



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.



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.



THE SYSTEM OF MODEL NUMBERS FOR SPLIT MODELS



1 Model Type

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

3 Capacity

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

2 Function

E : Inverter Reverse Cycle
S : Inverter (Cooling only)

4 Type

K : Wall-Mounted Type



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Quality Management System Certificate



Certified to ISO 9001: 2008
Cert. No.: MY-AR 1010



Certified to ISO 9001: 2008
Registration Number: 01209Q20645R5L

Certified to ISO 9001: 2008

Panasonic HA Air-Conditioning (M) Sdn.Bhd.
Cert. No.: MY-AR 1010

Certified to ISO 9001: 2008

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

Environmental Management System Certificate



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



Certified to ISO 14001: 2004
Registration Number: 02107E10411R3L

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Standard Warranty



Panasonic

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We will promote lifestyles with virtually zero CO₂ emissions all throughout the world

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We will create and pursue a business-style which makes the best use of resources and energy

• Specifications are subject to change without prior notice for further improvement • The contents of this catalogue are effective as of August, 2012 • Due to printing considerations, the actual colours may vary slightly from those shown • All graphics are provided merely for the purpose of illustrating a point.

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