



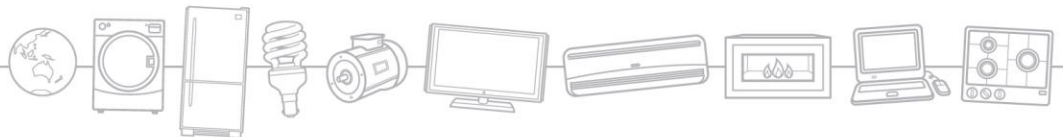
Proposed changes to air conditioner regulations

17 March 2017

A joint initiative of Australian, State and Territory and New Zealand Governments.

Decision Regulation Impact Statement – Option A

- Zoned Energy Rating Label and SEER rating
- Include portable air conditioners
- Include air conditioners >65kW
- Technical fixes
- Increase New Zealand MEPS



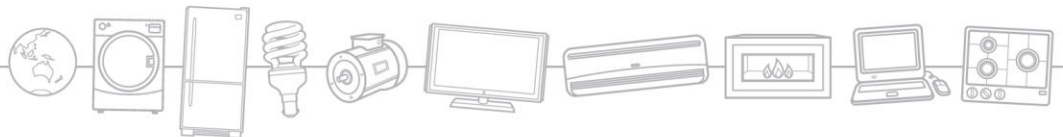
Decision Regulation Impact Statement

- Option B – Option A plus MEPS for single duct portables
- Option C – Option B plus increased MEPS for air conditioners >65kW



Implementation of new regulations

- 1 April 2019 start date – for most air conditioners
- 1 October 2017 (estimated) – double duct portable air conditioners
- 1 October 2020 – 65kW plus air conditioners



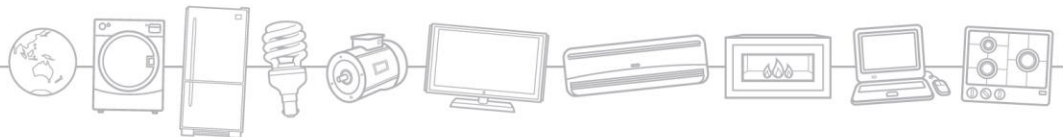
Transition to new requirements

- Currently in scope – can be sold for remainder of registration and use existing energy label
- Voluntary use of the new label
- Products newly in scope – grandfathered if can't comply
- Update fee for existing registrations

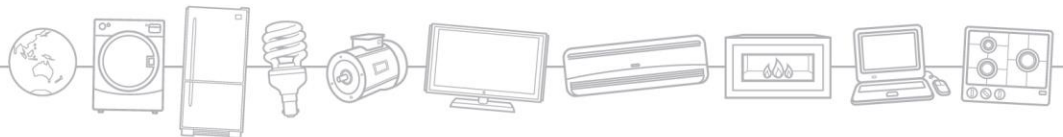


MEPS and labelling requirements

- Specified in GEMS Determination
- Comments on draft open to all
- Four week comment period
- Any changes will be re-distributed for further comment before being finalised



Commercial air conditioner > 30 kW temperature bins



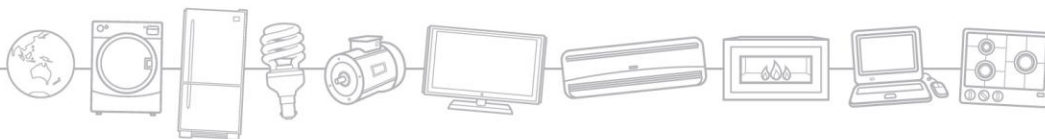
AS/NZS 3823.4 Amendment 1

- Has three zones – Hot/humid, cold & mixed.
- Defines cooling and heating seasons for each.
- Defines outdoor temperatures at which cooling and heating is required.
- Tallies all of these hours and applies a percentage to them to account for the likelihood of use.
- Designed with a domestic application in mind.



Commercial use applications >30kW

- The supplementary consultation paper asked if products > 30 kW should be rated using different user assumptions. Three submissions agreed.
- New temperature bins and zero load temperatures will be defined for products >30 kW.
- Note, this DOES NOT affect testing requirements.



Commercial use applications (>30kW)

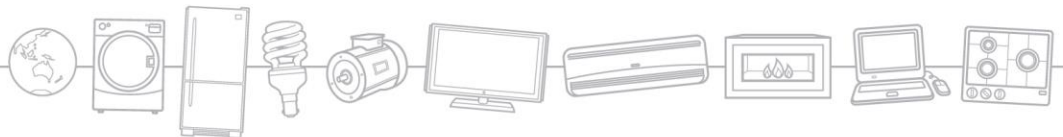
To develop these bins, E3 will:

- Develop the required amendments in consultation with industry.
- Publish them on the Energy Ratings website and distribute them widely.
- Publish them in the DRIS and Determination.
- Update AS/NZS 3823.4 to match the regulations at the next opportunity.



Representative commercial use

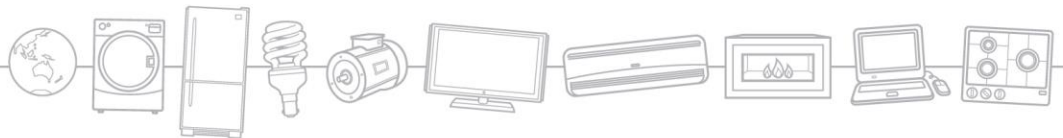
- There are thousands of different commercial use patterns. The challenge is to settle on reasonably representative ones for the three zones.
- Propose to use the 2012 COAG report *Baseline Energy Consumption and Greenhouse Gas Emissions In Commercial Buildings in Australia* to help guide the process.



Baseline report findings

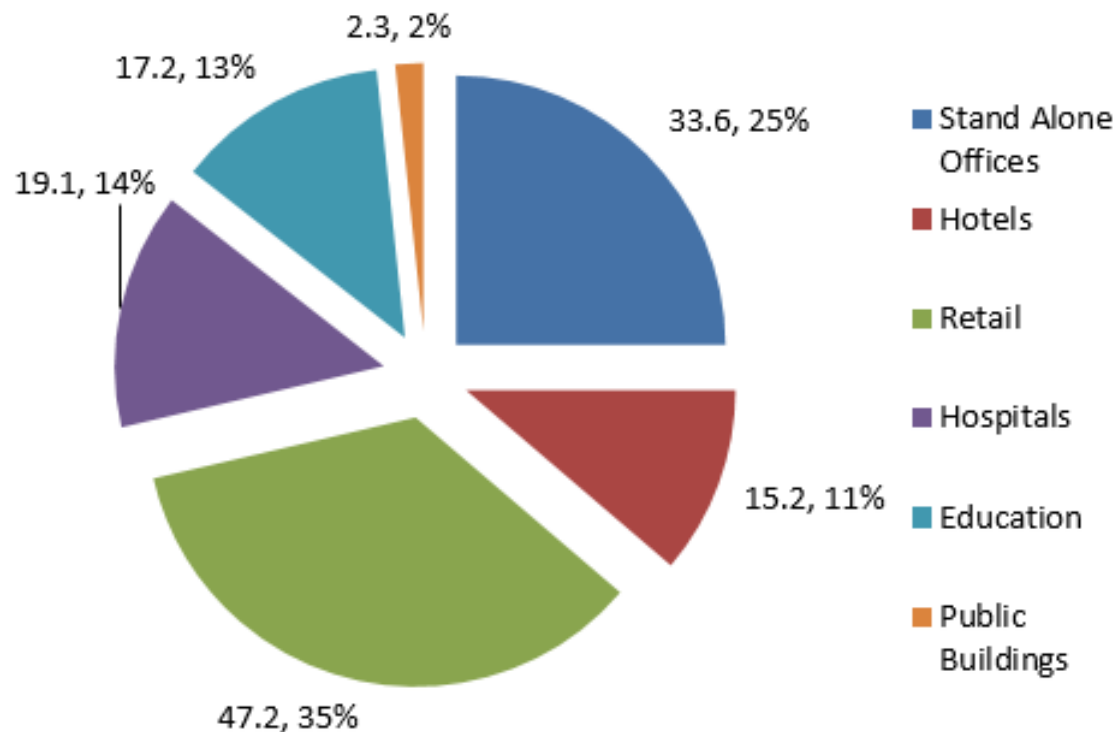
Looked at stock of:

- Standalone offices
- Hotels
- Retail
- Hospitals
- Schools
- Universities
- VET buildings
- Public buildings
- Law courts



Baseline report findings

Figure 1.1 - Total Energy Consumption by Building Type, 2009 (PJ, % shares)

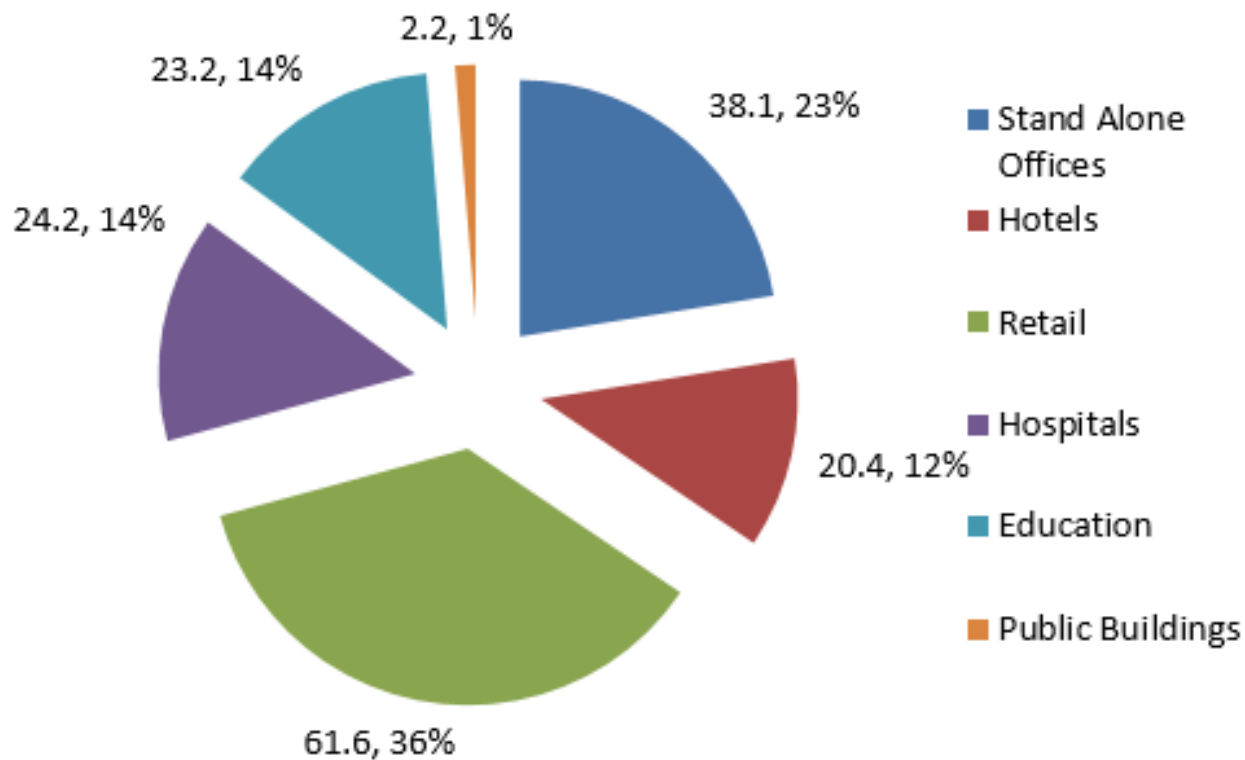


Source - [pitt&sherry](#)



Baseline report findings - 2020

Figure 1.2 - Total Energy Consumption by Building Type, 2020 (PJ, % shares)



Source - [pitt&sherry](#)



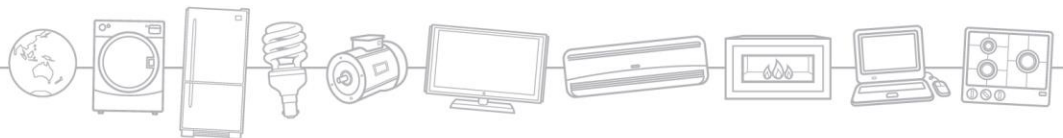
Baseline report findings – hours of use

- All shopping centre retail areas: 79 hrs/week
 - 96 hours per week for supermarkets
 - 59 per week for other tenancies
- Proposed operating schedule
 - 7.00 am to 7 pm
 - Monday to Saturday
 - 72 hours per week



Proposed cooling/heating temperatures

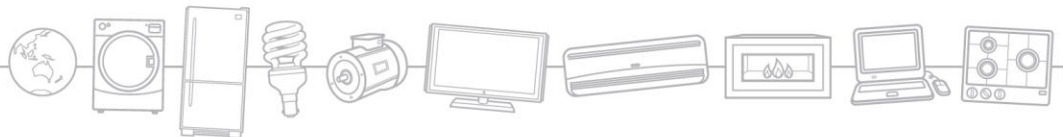
- Commissioned Dr Paul Bannister (Energy Action) to look at $t=0$ and $t=100$ for the 3 zones.
- Modelled thermal loads versus outdoor temperatures for three buildings in the three climate zones to find average values.



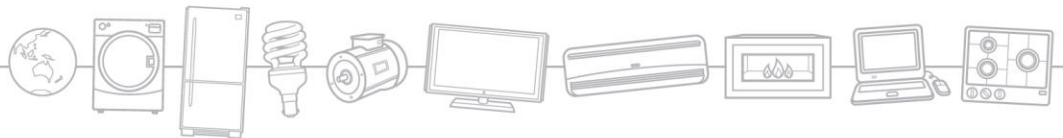
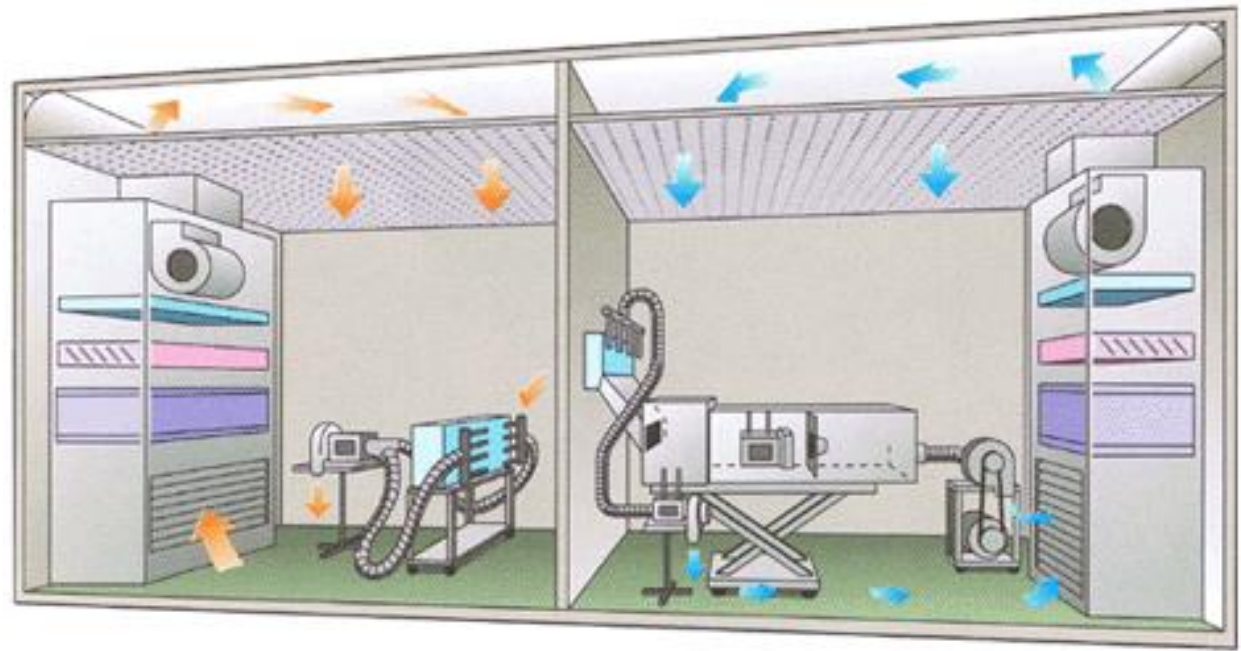
Consultation process

- Please distribute the papers to interested parties.
- Feedback sought by COB 18 April 2017.
- Standards Committee EL-056 support will be sought before the final outcome is published on the Energy Ratings website – aim is the end of April 2017.

- Questions?



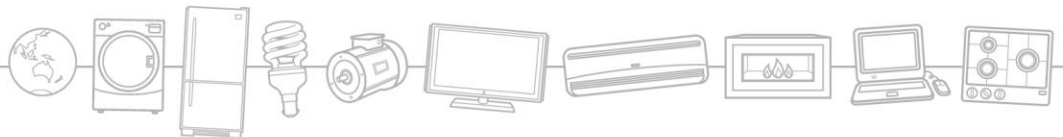
New testing requirements



Consultation processes

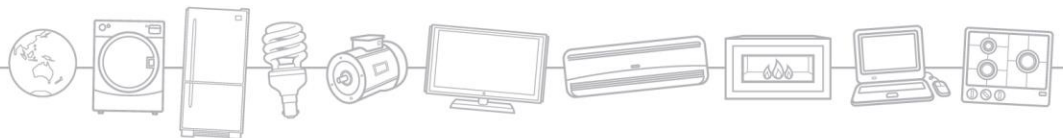
In response to feedback on the supplementary consultation paper, we looked closely at the testing requirements. The aim was to:

- Minimise costs and difficulty where possible.
- Create a range of flexible options.
- Maintain acceptable accuracy.



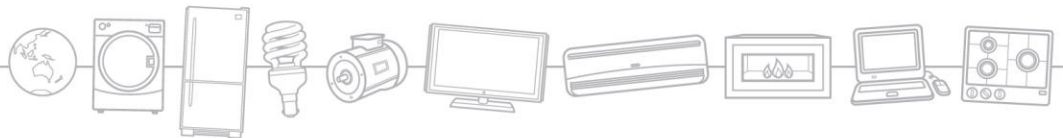
H2 testing

- Air enthalpy will be permissible for all products.
- The duration of a calorimeter test at H2 can be shorted from 6 hours (or 6 complete defrost cycles) to 3 complete defrost cycles.
- These arrangements are also applicable to voluntary H3 tests (i.e. minus 7 °C).
- When practical, E3 will still use a full calorimeter room test for compliance purposes.



Mandatory versus optional testing

- The SEER standard contains a number of “mandatory” and “optional” tests.
- E3 will not require the “optional” tests, however research indicates that performing the “optional” tests can significantly improve a product’s SEER ratings.



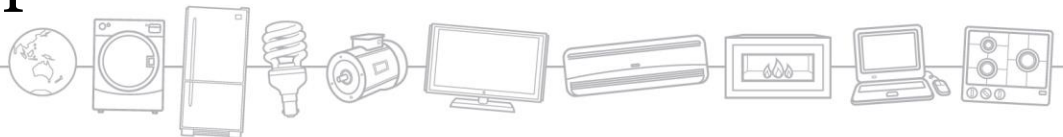
Using default SEER values

- The SEER standard has two mandatory cooling tests for fixed speed products:
 - Rated capacity T1 (35 °C) test (already required).
 - Capacity at 29 °C.
- The 29 °C test will be made optional. Results can rely on the default values for this test.
- Variable speed products may also be tested as a fixed speed. For a reverse cycle unit, this will reduce the testing from 5 to 3 or 4 tests.
- While these measures reduce testing costs, the SEER values will be sub-optimal.



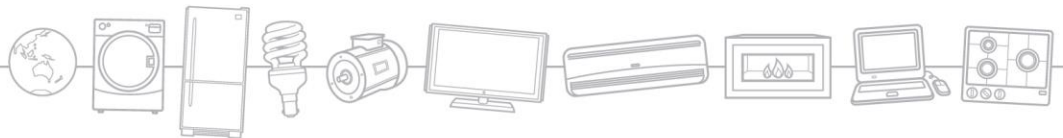
Testing options for products > 30 kW capacity

- Eurovent certification.
- AHRI certification for cooling.
- Equivalent regional adoptions of our ISO test standards.
- Simulation testing – any software may be authorised.
- However, ratings must be to local voltage and frequency requirements. Declarations of inoperative power and true power factor still required.
- When practical, E3 will still use a calorimeter room check test for compliance.



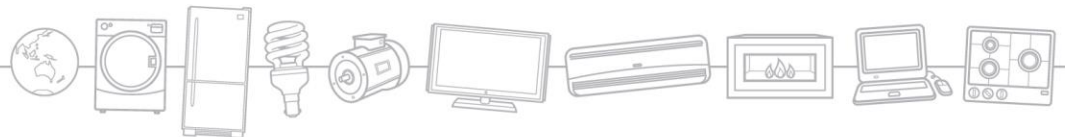
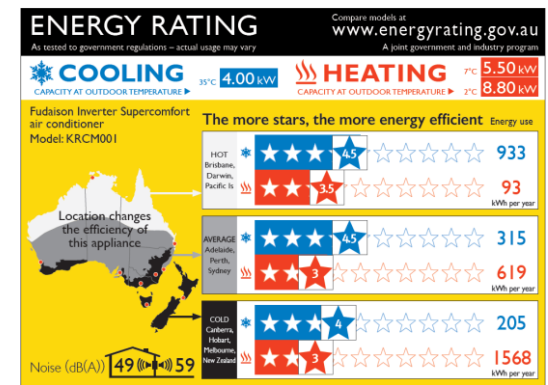
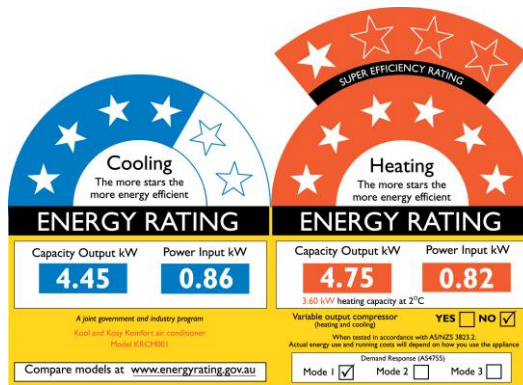
Other requirements

- The maximum cooling test will no longer be a requirement.
- For a registration test report, test labs do not need to be from Australia/New Zealand, nor do they need to be National Association of Testing Authorities Australia (NATA) accredited.



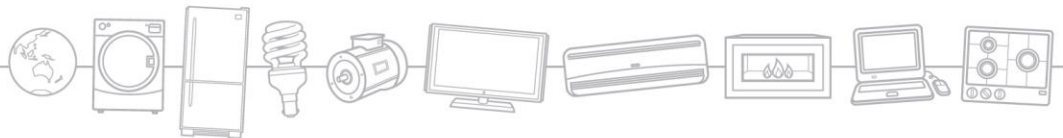
Product category	Labelling requirements	Online Rating	Minimum test permitted
Non-ducted splits, single phase	Mandatory	SEER	Calorimeter
Non-ducted splits, three phase, <30 kW	Voluntary	SEER	Air enthalpy
Unitary, single phase	Mandatory	SEER	Calorimeter
Unitary, three phase <30 kW	Voluntary	SEER	Air enthalpy
Ducted single split, <30 kW	Voluntary	SEER	Air enthalpy
Ceiling cassettes, <30 kW	Voluntary	SEER	Air enthalpy
Water source within scope of AS/NZS 3823.1.3	Prohibited	AEER/ACOP	Air enthalpy
Multi-splits <30 kW	Prohibited	SEER on registered combination	Air enthalpy
All other products > 30 kW	Prohibited	Cooling SEER, heating ACOP	Simulation, certification or air enthalpy
Single duct portables	Mandatory	EER/COP	Calorimeter

Zoned Energy Rating Label



Zoned Energy Rating Label

- Displays efficiency and energy consumption across three distinct climate zones (Australia and New Zealand)
- Opportunity to display additional information valuable to consumers (and installers)
- Further online tools to give engaged consumers more detailed information (and for retailers to use as a selling point)



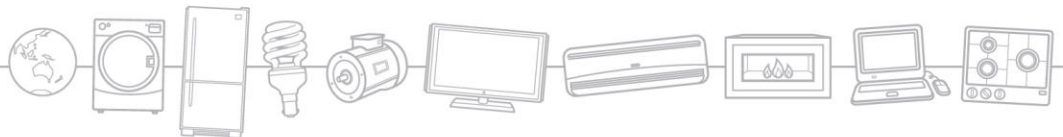
Developing the Zoned Label

- E3 agreed to investigate the development of new label in March 2013
- Multiple rounds of graphic design, technical research and both qualitative and quantitative testing
- In total, approximately 4500 consumers, retailers and installers attended focus groups, interviews and participated in online surveys and forums



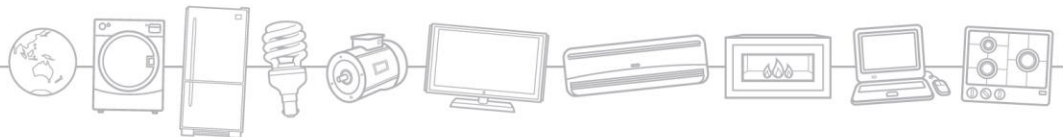
2017 testing

- Final round of testing to finalise design
- Online quantitative component, focus groups and online forum
- Focus on capacities (particularly H1/H2) and noise
- Broad overall impressions
- Report on Energy Rating



2017 finalisation

- Changed wording for capacity declaration
- Updated sound declaration to include word 'noise' and enhance speaker shape
- Increased size of text and adjust wording
- Removed QR code



The ZERL – non ducted

ENERGY RATING

As tested to government regulations – actual usage may vary

Compare models at www.energyrating.gov.au

A joint government and industry program

COOLING

CAPACITY AT OUTDOOR TEMPERATURE

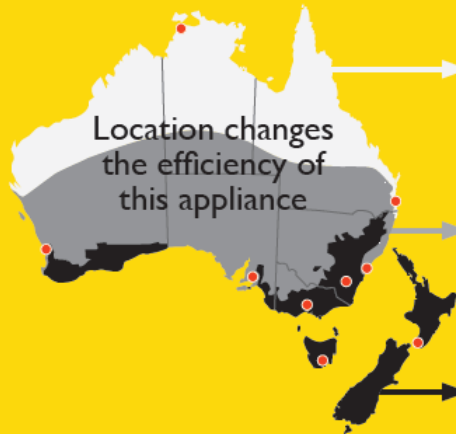
35°C 4.00 kW

HEATING

CAPACITY AT OUTDOOR TEMPERATURE

7°C 5.50 kW
2°C 8.80 kW

Fudaison Inverter Supercomfort
air conditioner
Model: KRCM001



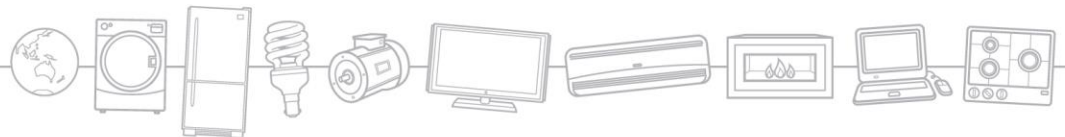
The more stars, the more energy efficient

Energy use

Location	Cooling Stars	Heating Stars	Cooling kWh per year	Heating kWh per year
HOT Brisbane, Darwin, Pacific Is	4.5	3.5	933	93
AVERAGE Adelaide, Perth, Sydney	4.5	3	315	619
COLD Canberra, Hobart, Melbourne, New Zealand	4	3	205	1568

Noise (dB(A))

49 59



ZERL – single duct portable (r/c)

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CAPACITY ▶

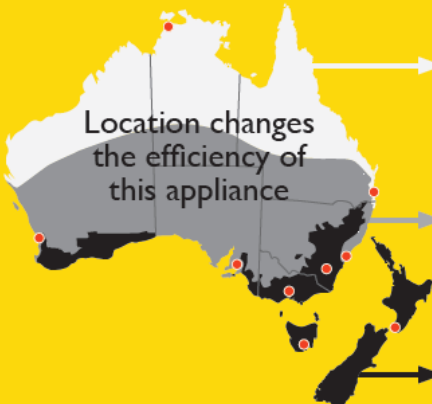
2.50 kW



CAPACITY ▶

2.40 kW

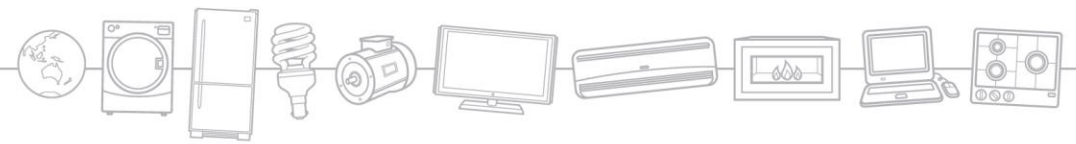
Fudaison Inverter single duct portable air conditioner
Model: KRCM002



The more stars, the more energy efficient Energy use



Noise (dB(A)) 60



ZERL – single duct portable (cooling only, water evaporation feature)

ENERGY RATING

Compare models at www.energyrating.gov.au

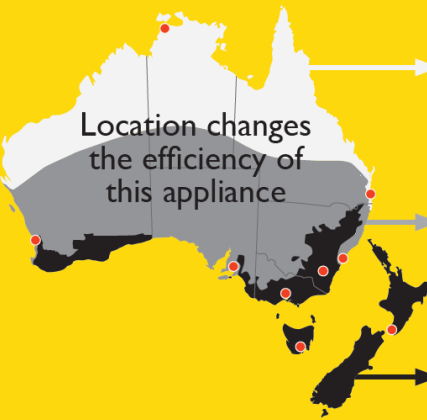
As tested to government regulations – actual usage may vary

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with water **2.93 kW**
without water **2.50 kW**

Fudaison single duct portable evaporative air conditioner
Model: KRCM002

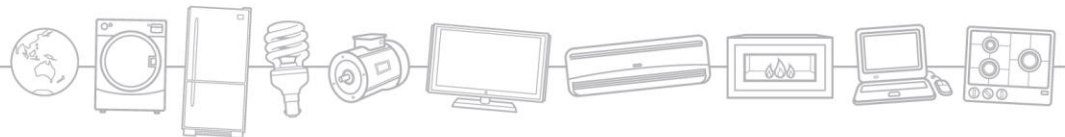


Location changes the efficiency of this appliance

Noise (dB(A)) **59**

The more stars, the more energy efficient Energy use

Climate Zone	Stars	Energy Use (kWh per year)
HOT Brisbane, Darwin, Pacific Is	0	2027
AVERAGE Adelaide, Perth, Sydney	0	758
COLD Canberra, Hobart, Melbourne, New Zealand	0	492



ZERL – double duct portable

ENERGY RATING

As tested to government regulations – actual usage may vary

Compare models at www.energyrating.gov.au

A joint government and industry program

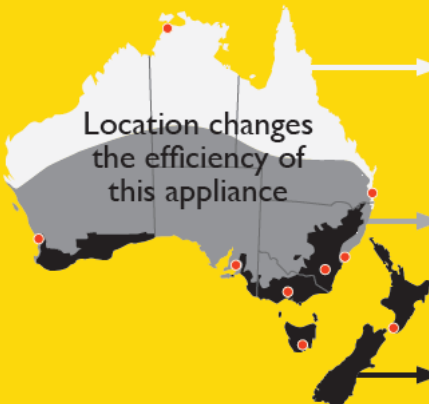
 **COOLING**
CAPACITY AT OUTDOOR TEMPERATURE ▶

35°C **2.50 kW**

 **HEATING**
CAPACITY AT OUTDOOR TEMPERATURE ▶

7°C **2.50 kW**
2°C **2.15 kW**

Fudaison Inverter double duct portable air conditioner
Model: KRCM003



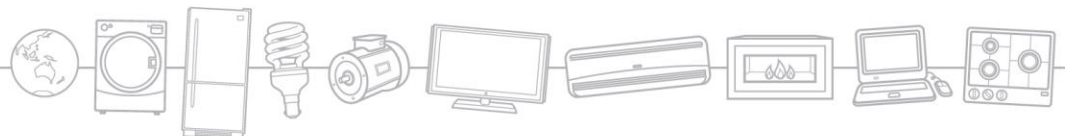
Location changes the efficiency of this appliance

Noise (dB(A))



The more stars, the more energy efficient Energy use

Climate	Cooling Stars	Heating Stars	Cooling kWh per year	Heating kWh per year
HOT Brisbane, Darwin, Pacific Is	1.5	1	1101	96
AVERAGE Adelaide, Perth, Sydney	1.5	0.5	382	596
COLD Canberra, Hobart, Melbourne, New Zealand	1	0.5	250	1507



ZERL - ducted

ENERGY RATING

As tested to government regulations – actual usage may vary

Compare models at www.energyrating.gov.au

A joint government and industry program

 **COOLING**
CAPACITY AT OUTDOOR TEMPERATURE ▶

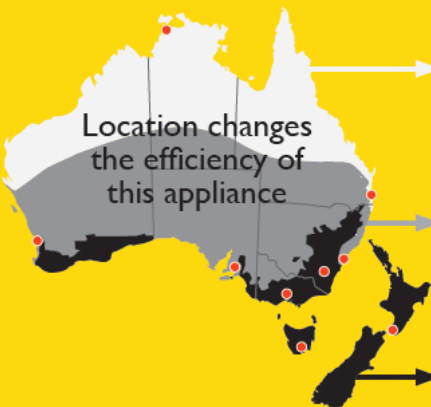
35°C **14.00 kW**

 **HEATING**

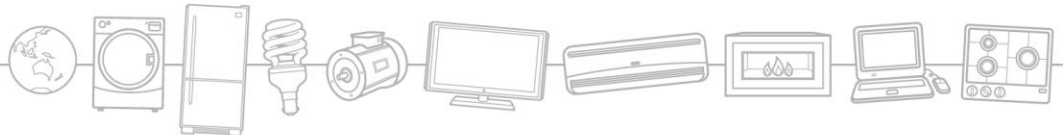
CAPACITY AT OUTDOOR TEMPERATURE ▶ 7°C **16.00 kW**
▶ 2°C **13.95 kW**

Fudaison Inverter Supercomfort
ducted air conditioner
Model: KRCM001

The more stars, the more energy efficient Energy use



Noise (dB(A))  **62**



Calculator

- rating information more closely tailored to location
- more accurate running costs
- options to increase or decrease default operating hours (and thus annual energy consumption)
- display of greenhouse gas emissions, using localised emissions intensity data
- hourly operating costs (rated capacity)

