

Australian/New Zealand Standard™

**Performance of electrical appliances—
Airconditioners and heat pumps**

**Part 3: Calculation of performance for
minimum energy performance standard
(MEPS) requirements**

AS/NZS 3823.3:2001

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The following interests are represented on Committee EL-015:

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Australian Electrical and Electronic Manufacturers Association
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-015, Quality and Performance of Household Electrical Equipment, to set out a method of determining the performance of three phase airconditioners using a mathematical model of the refrigerant cycle and measurements of the appliance operating characteristics.

Testing of airconditioners under controlled operating conditions is defined in AS/NZS 3823.1.1, *Performance of electrical appliances—Airconditioners and heat pumps*, Part 1.1: *Test Methods—Non-ducted airconditioners and heat pumps—Testing and rating for performance* and AS/NZS 3823.1.2, *Performance of electrical appliances—Airconditioners and heat pumps*, Part 1.2: *Test Methods—Ducted airconditioners and air-to-air heat pumps—Testing and rating for performance*. Direct assessment of the performance of airconditioner appliances requires access to large capacity calorimeter or psychrometric loop test facilities. As an alternative to physical testing this Standard defines an assessment procedure for minimum energy performance requirements based on simplified measurements and a simulation model of airconditioner performance. In all cases test results obtained by physical testing using the procedures defined in AS/NZS 3823.1.1 or AS/NZS 3823.1.2 take precedence over the results obtained using this Standard. If the simulation methods described in this Standard are not considered applicable to a particular appliance, then that appliance shall be assessed under AS/NZS 3823.1.1 or AS/NZS 3823.1.2.

The procedure defined in this Standard provides a low cost method of assessing airconditioner performance and can also be used to assess design modifications for appliances that fail the minimum energy performance standard set in AS/NZS 3823.2.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies procedures for calculating the performance of airconditioners and heat pumps of the vapour compression type up to a rated cooling capacity of 65 kW, for minimum energy performance standard requirements. It does not cover multi-split appliances or evaporative airconditioners. This Standard sets out a method of determining the performance of airconditioners using a combination of measured component performance, equipment operating conditions and a mathematical model to determine the appliance performance.

This Standard can be used to quantify the following values for cooling and heating:

- (a) Rated cooling capacity.
- (b) Rated heating capacity.
- (c) Energy efficiency ratio (EER).
- (d) Coefficient of performance (COP).

This Standard does not apply to the rating of the following:

- (i) Water-source heat pumps.
- (ii) Multi-split airconditioners and heat pumps.
- (iii) Mobile appliances having a condenser exhaust duct.

Unitary systems where there is a thermal interaction between the evaporator and condenser.

1.2 OBJECTIVE

The objective of this Standard is to provide information on the performance of airconditioning appliances to determine compliance with minimum energy performance standard requirements specified in AS/NZS 3823.2.

1.3 APPLICATION

The procedure in this Standard uses a mathematical model to assess the performance of airconditioners, hence the application of the procedure is restricted by the availability of suitable mathematical models. The performance assessment procedure is based on measured refrigerant circuit operating conditions (subcooling and superheating) and measured refrigerant circuit pressure drops. If these measurements are not available then specified default conditions shall be used in the analysis. The default conditions will result in a conservative evaluation of performance.