


Dated 30 April 2013

Gary Gray
Minister for Resources, Energy and Tourism
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1 Name of Determination

This Determination is the Greenhouse and Energy Minimum Standards (Computer Monitors) Determination 2013.

2 Commencement

This Determination comes into force on 1 October 2013.

3 Definitions

In this Determination:


Note 1: AS/NZS 4665.1:2005 is available from Standards Australia Limited.


AS/NZS 5815.1:2012 means Australian/New Zealand Standard AS/NZS 5815.1:2012 Information technology equipment - Energy performance of computer monitors Part 1: Methods of measurement of energy performance, as it existed on the day this Determination came into force.

Note: AS/NZS 5815.1:2012 is available from Standards Australia Limited.

amatic brightness control—see subsection 6(5).

comparative energy consumption—see subsection 7(4).


Note: EN 55103-1:2009 is available from Standards Australia Limited.

IEC 60601 means IEC Standard IEC 60601-1:2005 Medical electrical equipment – Part 1: General requirements for basic safety and essential performance, as it existed on the day this Determination came into force.

Note 1: IEC 60601-1:2005 is available from Standards Australia Limited.

Note 2: IEC 60601-1:2005 includes all amendments up to and including IEC 60601-1:2005/Amdt 1:2012 made on 13 July 2012.

computer monitor means a commercially-available product with a display screen and associated electronics, encased in a single housing, that as its primary function displays visual information from a computer, workstation or server, including via a wireless connection.
Note: Common computer monitor technologies include liquid crystal display (LCD), light emitting diode (LED), cathode-ray tube (CRT), and plasma display panel (PDP).

**projected annual energy consumption** (or **PAEC**)—see subsection 7(3).

**off mode**—see subsection 6(1).

**standby active (sleep) mode**—see subsection 6(3).

Note: Pursuant to paragraph 13(1)(b) of the *Legislative Instruments Act 2003*, expressions used in this declaration have the same meaning as in the Act. For example, section 5 of the Act defines the following expressions:

- category A product
- covered by
- family of models
- GEMS
- GEMS labelling requirements
- GEMS level requirements
- model
- product classes
- supply

4 Interpretation

(1) If a term or phrase is not defined under the Act, the Regulations to the Act or in this Determination, but the term is defined in a standard specifically mentioned in section 3 of this Determination, the term or phrase is to be read for the purposes of this Determination as having the meaning of the term under the relevant standard.

Note: Notwithstanding this, for convenience to users, the key terms for ascertaining if a product is covered by this Determination are defined in this Determination.

(2) For the purposes of this Determination the applicable version of any document, including a standard, that:

(a) is referred to in a standard under the heading ‘Normative References’ or under an equivalent heading in a standard; and

(b) must be applied to give effect to this Determination or a standard referred to in this Determination, is the version of the document, including a standard, that existed at the date this Determination came into force.
5 \textbf{Specified product classes covered by this Determination} \\
(Act, section 23)

\textit{Products that are covered by this Determination}

(1) This Determination covers computer monitors specified in the table following this subsection which are designed to be connected to 230 or 240 volts mains voltage via:
(a) a direct connection; or
(b) an external power supply permanently connected to the product; or
(c) an external power supply that can be disconnected from the product.

\begin{tabular}{|c|p{0.5\textwidth}|}
\hline
\textbf{Column 1} & \textbf{Column 2} \\
Class & Description of class \\
\hline
Class 1 & Computer monitors with a diagonal screen size less than 76 cm (30 inches) and a screen resolution less than or equal to 1.1 MegaPixels. \\
Class 2 & Computer monitors with a diagonal screen size less than 76 cm (30 inches) and a screen resolution greater than 1.1 MegaPixels. \\
Class 3 & Computer monitors with a diagonal screen size equal to or greater than 76 cm (30 inches) and equal to or less than 152 cm (60 inches). \\
\hline
\end{tabular}

\textit{Products that are not covered by this Determination}

(2) Despite subsection (1), the products described in Columns 2 and 3 of the following table are not covered by this Determination.

\begin{tabular}{|c|p{0.5\textwidth}|p{0.5\textwidth}|}
\hline
\textbf{Column 1} & \textbf{Column 2} & \textbf{Column 3} \\
Item & Description of product not covered by this Determination & Detailed description (if applicable) \\
\hline
1 & Electronic displays used exclusively for digital signage or digital picture frames & \\
2 & Electronic displays used exclusively for advertising & \\
3 & High performance electronic displays & Displays using in plain switching (IPS) or vertical alignment (VA) technology and offering:
(a) a native pixel resolution greater than or equal to 2.3 (1920 x 1200) MegaPixels; and \\
(b) a viewing angle greater than or equal to 178 degrees (at a minimum contrast ratio of 1:10); and \\
(c) a colour gamut greater than or equal to 72 per cent of NTSC; and \\
(d) a diagonal screen size greater than or equal to 61 cm (24 inches). \\
\hline
\end{tabular}
<table>
<thead>
<tr>
<th>Item</th>
<th>Description of product not covered by this Determination</th>
<th>Detailed description (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Specialised electronic displays</td>
<td>Displays intended for use primarily in commercial or professional fields (for example: engineering, medicine, graphic arts) and that are not intended for sale to the general public. Displays intended for use in these applications include the following: (a) displays defined as professional products that are in the scope of EN 55103; and (b) medical products as set out in the IEC 60601 series; and (c) displays intended for medical use that comply with the Digital Imaging and Communications in Medicine (DICOM) standard; and (d) products used in diagnostic medical applications that do not have a power state equivalent to standby active mode; and (e) displays that can display content through installed serial digital interface (SDI) signal path/s including medical electronic displays intended by manufacturers to be used in the diagnosis, treatment, or monitoring of a patient.</td>
</tr>
<tr>
<td>Column 1 Item</td>
<td>Column 2 Description of product not covered by this Determination</td>
<td>Column 3 Detailed description (if applicable)</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
</tbody>
</table>
| 5            | Combined products                                             | Products with video electronic display capability and other functionality, including one or more of the following:  
(a) built-in or integrated networking functionality, the circuitry for which cannot be physically separated or switched independently from the electronic display component. Examples of such functionality include (without limitation) video-conferencing capability, VoIP capability, and PCoIP capability. The inclusion of a camera, microphone and/or loudspeakers is not a network function; or  
(b) integrated personal computers, tablet computers, slate computers, electronic readers, smart phones, and personal digital assistants. |
| 6            | Public displays                                               | Products intended for electronically displaying content to multiple users such as in public settings, conference rooms, etc., with one or more of the following characteristics:  
(a) a screen size of 81 cm (32 inches) or above;  
(b) the product is marketed as a product that is intended to be viewed by more than one user at a time;  
(c) the product is not intended for desktop use;  
(d) the product is not supplied with a means of allowing it to be freestanding;  
(e) the product requires installation on a permanent basis (it cannot be easily moved without tools being used). |
<p>| 7            | Large displays with a diagonal display dimension greater than 152 cm (60 inches) | |</p>
<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2 Description of product not covered by this Determination</th>
<th>Column 3 Detailed description (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Products classified, marketed or sold as televisions or TVs.</td>
<td>Includes products with an AM integrated television tuner, a product with a computer input port (for example, VGA) that is marketed and sold primarily as a television, and component televisions.</td>
</tr>
</tbody>
</table>

6 GEMS level requirements

(Act, section 25)

Energy used by operating all products covered by this Determination—off mode

(1) In this Determination, *off mode* means the operational mode of a computer monitor that is:
   (a) connected to a power source; and
   (b) engaged by a mechanical power switch; and
   (c) not providing any function.

(2) All products covered by this Determination must have power consumption which is equal to or less than 1 watt when used in off mode.

Energy used by operating all products covered by this Determination—standby active (sleep) mode

(3) In this Determination, *standby active (sleep) mode* means the operational mode of a computer monitor that:
   (a) is connected to a power source; and
   (b) has all mechanical (hard) power switches turned on; and
   (c) has been placed into a low-power mode by receiving a signal from an externally connected device (for example, a computer, game console or set-top box) or by cause of an internal function such as a sleep timer or occupancy sensor.

(4) All products covered by this Determination must have power consumption which is equal to or less than 2 watts when used in standby active (sleep) mode.

Energy used by operating Class 1 and Class 2 products in on mode

(5) In this Determination:
   *automatic brightness control* means a self-acting mechanism that controls the brightness of a monitor as a function of ambient light.
   *on mode* means the operational mode of a computer monitor that:
   (a) is connected to a power source;
(b) has all mechanical (hard) power switches turned on; and
(c) is performing its primary function of producing an image.

(6) A product in a class specified in Column 1 of the following table must have power consumption when used in on mode (or \(P_{\text{avg}}\)) less than the amount worked out in accordance with the corresponding formula in Column 2.

<table>
<thead>
<tr>
<th>Column 1 Class</th>
<th>Column 2 Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>(P_{0(\text{MEPS})} = (6 \times \text{screen resolution in MegaPixels}) + (0.00775 \times \text{screen area in cm}^2) + 3)</td>
</tr>
<tr>
<td>Class 2</td>
<td>(P_{0(\text{MEPS})} = (9 \times \text{screen resolution in MegaPixels}) + (0.00775 \times \text{screen area in cm}^2) + 3)</td>
</tr>
</tbody>
</table>

(7) For products which have automatic brightness control enabled by default, the power consumption must be calculated in accordance with the following formula:

\[P_{\text{avg}} = (0.8 \times P_h) + (0.2 \times P_l)\]

Where:

- \(P_{\text{avg}}\) is the average on mode power consumption in watts, rounded to the nearest tenth of a watt
- \(P_h\) is the on mode power consumption in high ambient lighting conditions
- \(P_l\) is the on mode power consumption in low ambient lighting conditions.

Note: This formula is based on the assumption that the monitor will be in low ambient conditions 20 per cent of the time.

Conducting tests

(8) The requirements for conducting tests for products covered by this Determination are those mentioned in sections 2 and 3 of AS/NZS 5815.1:2012.

(9) If a product covered by this Determination is designed to be connected to 230 or 240 volts main voltage via an external power supply that can be disconnected from the product, then the tests mentioned in subsection (8) must be conducted:

(a) in the case of a product which is supplied with an external power supply—with the supplied external power supply; or
(b) in the case of a product which is not supplied with an external power supply—with an external power supply which has a Mark III energy performance mark in accordance with AS 4665.1:2005.

7 GEMS labelling requirements

(Act, section 26)

Simplified outline of this Section

(1) The following is a simplified outline of this Section:
All products that are covered by this Determination are required to have an energy rating label.

To work out the comparative energy consumption which is shown on the label, first the projected annual energy consumption for the product must be calculated in accordance with subsection (3). Subsection (4) sets out how to test the validity of the comparative energy consumption.

Next, the comparative energy consumption is used to work out the star rating index by using the formula in subsection (8). Subsection (7) sets out how to convert a star rating index into a star rating.

This Section also specifies the format for the energy rating label (see subsection (10)) and where it must be placed (see subsection (11)).

**Requirement for products covered by this Determination to have an energy rating label**

(2) All products covered by this Determination are required to have an energy rating label which:
   (a) is in the format required by subsection (9); and
   (b) is affixed to the product in accordance with subsection (10); and
   (c) contains information calculated in accordance with subsections (4) and (6).

**Working out the projected annual energy consumption (PAEC) for a product**

(3) The projected annual energy consumption (or PAEC) for a product is worked out in accordance with the following formula:

\[
PAEC = 0.365 \times ((On_{avg} \times 10) + (14 \text{ hour standby active})) \text{kWh/yr}
\]

Where:

- \(PAEC\) is the projected annual energy consumption
- \(On_{avg}\) is the on mode average power consumption determined in accordance with AS 5815.1:2012.
- 14 hour standby active is the standby active mode average power consumption determined in accordance with AS 5815.1:2012.

**Content of label—comparative energy consumption**

(4) The comparative energy consumption of a product is the product's projected annual energy consumption worked out in accordance with subsection (3) but rounded to the nearest whole number and expressed in units of kilowatt-hour/year.

(5) The product's energy rating label must show the comparative energy consumption worked out in accordance with subsection (4).
Content of label—star rating

(6) The star rating for a product is the rating shown in Column 2 in the following table for that product's corresponding star rating index shown in Column 1.

<table>
<thead>
<tr>
<th>Column 1 Star rating index</th>
<th>Column 2 Star rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal to or greater than 1, but less than 1.5</td>
<td>1</td>
</tr>
<tr>
<td>Equal to or greater than 1.5, but less than 2</td>
<td>1.5</td>
</tr>
<tr>
<td>Equal to or greater than 2, but less than 2.5</td>
<td>2</td>
</tr>
<tr>
<td>Equal to or greater than 2.5, but less than 3</td>
<td>2.5</td>
</tr>
<tr>
<td>Equal to or greater than 3, but less than 3.5</td>
<td>3</td>
</tr>
<tr>
<td>Equal to or greater than 3.5, but less than 4</td>
<td>3.5</td>
</tr>
<tr>
<td>Equal to or greater than 4, but less than 4.5</td>
<td>4</td>
</tr>
<tr>
<td>Equal to or greater than 4.5, but less than 5</td>
<td>4.5</td>
</tr>
<tr>
<td>Equal to or greater than 5, but less than 5.5</td>
<td>5</td>
</tr>
<tr>
<td>Equal to or greater than 5.5, but less than 6</td>
<td>5.5</td>
</tr>
<tr>
<td>Equal to or greater than 6, but less than 7</td>
<td>6</td>
</tr>
<tr>
<td>Equal to or greater than 7, but less than 8</td>
<td>7</td>
</tr>
<tr>
<td>Equal to or greater than 8, but less than 9</td>
<td>8</td>
</tr>
<tr>
<td>Equal to or greater than 9, but less than 10</td>
<td>9</td>
</tr>
<tr>
<td>Equal to or greater than 10</td>
<td>10</td>
</tr>
</tbody>
</table>

(7) A product's star rating index is worked out in accordance with the following formula:

\[
SRI = 1 + \frac{\log\left(\frac{CEC}{BEC}\right)}{\log(1 - ERF)}
\]

Where:

- SRI is the star rating index
- CEC is the comparative energy consumption for the product
- BEC is the base energy consumption worked out in accordance with subsection (8)
- ERF is the energy rating factor, which is 20 per cent or 0.2
- log means log to base 10.

(8) A product's base energy consumption is worked out in accordance with the following formula:

\[
BEC = 65.41 + (0.00934 \times \text{screen area cm}^2)
\]
Format of label

(9) The relevant format for the energy rating label for a product is:
   (a) in the case of a product with a star rating of six or less—the format as set out in Schedule 1; or
   (b) in the case of a product with a star rating of seven or more—the format as set out in Schedule 1 in which case only six stars may be shown on the label, or the format as set out in Schedule 2.

Affixing label

(10) The energy rating label must be affixed to:
   (a) the top of the computer monitor; or
   (b) the screen or mask of the computer monitor.

(11) To avoid doubt, an energy rating label may be part of another label so long as the energy rating label complies with the requirements of this Determination.

Other labels

(12) In addition to the label affixed in accordance with subsection (2), an energy rating label may also be affixed to the packaging of the product.

8 Other GEMS requirements

(Act, section 27)

There are no other GEMS requirements for products covered by this Determination.

9 Families of models

(Act, section 28)

(1) Two or more models of a product covered by this Determination are in the same family of models if those models:
   (a) are marketed in the same category or class of product; and
   (b) have the same energy performance characteristics; and
   (c) have identical physical characteristics; and
   (d) are included on a single test report which was prepared prior to the application for registration for the model being made under section 41 of the Act.

(2) However, a model cannot be a member of a family of models if its inclusion in that family would lead to the family consisting of more than 10 models.

10 Product Categories

(Act, section 29)

The products covered by this Determination are category A products.
Note

Schedule 1—Format of six-star label

1 Colour and text details for six-star label

(1) The diagram in Item 2 of this Schedule shows the colour and text requirements for a six-star energy rating label.

(2) The label must be printed on a white background using the following colours:
   (a) for red—Pantone Warm Red; and
   (b) for yellow—Pantone 116; and
   (c) for black—Pantone Black.

(3) The entire label must be in only one font, which can be any one of the following:
   (a) Gill Sans; or
   (b) Humanist 521; or
   (c) Hammersmith.

(4) The band indicated by the letter "a" in the diagram must terminate according to the computer monitor’s star rating, either bisecting the relevant star for a rating involving a half star, or for a rating of only full stars, bisecting the gap between the relevant star and the next highest on the scale.

(5) The brand and model of the product must:
   (a) be inserted where indicated by the letter "b" in the diagram; and
   (b) be complete and concise; and
   (c) not exceed a length of 50 mm; and
   (d) be centred horizontally in the area allowed.

(6) The product's comparative energy consumption must be shown where indicated by the letter "c" in the diagram.

(7) To avoid doubt, the energy consumption figure and the star ratings shown in the diagram below are examples only, and the comparative energy consumption and the star rating for the particular product must be shown on the label for that product.
2 Colour and text requirements for six-star label—diagram

![Diagram of six-star label with color and text requirements]

- **Red**: Black text 12 pt
- **Black with white text**: 28 pt
- **Black 7 pt italics**: Red 7 pt
- **Black 10 pt**: Black 10 pt
- **Red with bold white text**: 22 pt
- **Black 10 pt**: Black
- **Yellow**: Black 6 pt
- **White with black text**: 10 pt, Black underline 0.5 pt

*Compare all models at [www.energym rating.gov.au](http://www.energym rating.gov.au)*
3 Physical layout requirements for six-star label

The following diagram shows the physical layout requirements for a six-star label.
4 **Star dimensions**

The following diagram shows the dimensions for the stars (referred to as "Fig B5" in the diagram in Item 3 of this Schedule).

The apex for each star point lies on the corner of a pentagon. Angles are 108° for the pentagon and 36° for each star apex.

For the smaller star (lower arch) the pentagon side \( x \) is 6 mm (height \( y \) is 9.2 mm) and for the larger star (upper arch) the pentagon side \( x \) is 7 mm (height \( y \) is 10.8 mm)
Schedule 2—Format of ten-star label

1 Specifications for ten-star label

The specifications for the ten-star label are the same as those for a six-star label as set out in Schedule 1, but applied to the physical layout of the label shown in the diagram below.