

Australian Standard[®]

Electricity metering

Part 11: Single-phase multifunction watthour meters

This Australian Standard was prepared by Committee EL/11, Electricity Metering Equipment. It was approved on behalf of the Council of Standards Australia on 19 January 1995 and published on 5 May 1995.

The following interests are represented on Committee EL/11:

Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturers Association
Electricity Supply Association of Australia
Ministry of Commerce, New Zealand
National Standards Commission

Additional interests participating in preparation of Standard:

Electricity Council of N.S.W., Customer Automation Task Force

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AS 1284.11—1995

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Part 11: Single-phase multifunction watthour meters

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PREFACE

This Standard was prepared by the Standards Australia Committee EL/11 on Electricity Metering Equipment based on a draft specification from the Customer Automation Task Force of the Electricity Council of N.S.W.

The objective of this Standard is to provide electricity utilities and manufacturers with a product specification which could form the greater part of a purchasing specification for a particular single-phase multifunction meter.

Meter arrangements (internal connections, load control switches and terminations) have been standardized and options have been designated to assist in identifying particular meters and variations (see Appendix A).

For front-connected (bottom-connected) meters, virtually all possible options (24) have been designated (see Tables 1 and 2). This Standard retains the AS 1284.1 standard arrangement of terminals, viz. Active, Neutral, Neutral, Load (in a line, left to right) and likewise provides for the connection of the supply neutral to either of the designated Neutral terminals (depending on the option, e.g. see Table 1, options 101 and 102), and specifies that neither Neutral terminal position be used for any other purpose.

It is not envisaged that all meter options will ever be manufactured; on the contrary, it is expected that certain options will be deleted from the Standard in a future edition.

This Standard is Part 11 of AS 1284, *Electricity Metering*, which is published in Parts as follows:

- Part 1: General purpose induction watthour meters
- Part 2: Portable alternating current rotating standard watthour meters
- Part 3: Induction watthour meters—Energy demand type
- Part 4: Socket mounting system
- Part 5: General purpose electronic watthour meters
- Part 6: Ripple control receivers for tariff and load control
- Part 7: Internal clocks for meters and load control devices
- Part 8: Polyphase multifunction demand watthour meters (Class 1)
- Part 9: Electronic watthour meters (Classes 0.2 S and 0.5 S)
- Part 10.1: Data exchange for meter reading, tariff and load control—Direct local data exchange via hand-held unit (HHU)—IEC Standard interface
- Part 10.2: Data exchange for meter reading, tariff and load control—Direct local data exchange via hand-held unit (HHU)—ANSI Standard interface
- Part 11: Single-phase multifunction watthour meters (this Standard)
- Part 12: Polyphase multifunction (non-demand) watthour meters

The term 'informative' has been used in this Standard to define the application of Appendix A. An informative appendix is for information and guidance only.

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STANDARDS AUSTRALIA

Australian Standard

Electricity metering

Part 11: Single-phase multifunction watthour meters

1 SCOPE This Standard specifies requirements for and desirable features of single-phase multifunction watthour meters, either single-element or two-element, with or without load control capability, plug-in or front-connected (bottom-connected).

It applies to meters that are suitable for installation outdoors on 240 V, 50 Hz systems with time-of-use (TOU) tariffs, block tariffs, or combinations thereof.

NOTE: This Standard also lists information to be supplied with enquiries and orders for meters (see Appendix A).

2 APPLICATION This Standard shall be read in conjunction with AS 1284.1, AS 1284.4, AS 1284.5, AS 1284.6, AS 1284.7, AS 1284.10.1, AS 1284.10.2, AS 4140, AS 4141.1 and AS 4141.3.

3 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

1284	Electricity metering
1284.1	Part 1: General purpose induction watthour meters
1284.4	Part 4: Socket mounting system
1284.5	Part 5: General purpose electronic watthour meters
1284.6	Part 6: Ripple control receivers for tariff and load control
1284.7	Part 7: Internal clocks for meters and load control devices
1284.10.1	Part 10.1: Data exchange for meter reading, tariff and load control—Direct local data exchange via hand-held unit (HHU)—IEC Standard interface
1284.10.2	Part 10.2: Data exchange for meter reading, tariff and load control—Direct local data exchange via hand-held unit (HHU)—ANSI Standard interface
4140	Metering and utility information exchange—Glossary of terms
4141	Customer/utility information exchange
4141.1	Part 1: System architecture and functionality
4141.3	Part 3: Customer premises interfaces

Electronic Industries Association

EIA/TIA

232-E	Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange
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4 DEFINITIONS For the purpose of this Standard, the definitions in AS 4140, AS 4141.1, AS 1284.4, AS 1284.5, AS 1284.7 and those below apply.

4.1 Requirement—an item that shall be provided.

4.2 Desirable feature—an item that is not a requirement but which might be provided by the manufacturer with the intention of increasing the usefulness of the meter.

4.3 Cumulative maximum demand—the value held in a register to which the current maximum demand values are added at the end of each billing period.

4.4 Multifunction meter—a meter having the capability of measuring and displaying a variety of parameters, e.g. energy, power, voltage, current, power factor, frequency.

5 GENERAL REQUIREMENTS

5.1 Requirements A meter that is claimed to comply with this Standard shall meet all the requirements specified herein. A meter shall comply with AS 1284.5 which in turn calls up AS 1284.1. A plug-in meter shall comply with AS 1284.4.

A two-element meter shall comply with all requirements in respect of each element separately and on the most onerous combination of element loadings.

NOTE: This requirement will involve multiple testing.

5.2 Rating Meters shall be rated for use on a 240/415 V, 50 Hz system. The total rating shall be ≥ 100 A. Each current sensor shall be rated as follows:

- (a) $I_b \leq 15$ A.
- (b) $I_{\max} \geq 100$ A.

5.3 Power consumption The average power consumption of a single-element meter shall not exceed in total the value specified in AS 1284.5. The average power consumption of a two-element meter shall not exceed twice that value. There shall be no additional allowance for a load control device.

5.4 Desirable feature Any desirable feature provided shall comply with the relevant portions of the referenced documents (see Clause 3), e.g. AS 4141.3.

6 METER CIRCUITS AND TERMINATIONS

6.1 Arrangements The following basic arrangements are standardized:

- (a) Single-element front-connected (bottom-connected) meters (9 options) . . . Table 1.
- (b) Two-element front-connected (bottom-connected) meters (15 options) . . . Table 2.
- (c) Single-element plug-in meters (3 options) Table 3.
- (d) Two-element plug-in meters (4 options) Table 4.

Terminal markings for front-connected (bottom-connected) meters shall be as shown in Figure 1 or Figure 2.

NOTES:

- 1 A single-element meter is suitable for use on customer premises where supply is taken on a single block tariff or a single time-of-use (TOU) tariff.
- 2 A two-element meter is suitable for use on customer premises where supply is taken on a single tariff or two separate tariffs. It allows the customer the flexibility to transfer from two block tariffs to two TOU tariffs, or to one block tariff and one TOU tariff.
- 3 A two-element meter may be suitable for use on dual-occupancy premises provided that the total load does not exceed the maximum total rating of the meter.