IEC 60254-2

Edition 4.0 2008-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Lead-acid traction batteries –
Part 2: Dimensions of cells and terminals and marking of polarity on cells

Batteries d'accumulateurs de traction au plomb –
Partie 2: Dimensions des éléments et des bornes et indication de la polarité sur les éléments

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FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60254-2 has been prepared by committee 21: Secondary cells and batteries

This fourth edition cancels and replaces the third edition published in 1997 and its Amendment 1 (2000). It constitutes a technical revision. The main modification concerns the introduction of new dimensions.

The text of this standard is based on the following documents:

FDIS	Report on voting
21/668/FDIS	21/670/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 60254 series, published under the general title *Lead-acid traction batteries,* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

LEAD-ACID TRACTION BATTERIES –

Part 2: Dimensions of cells and terminals and marking of polarity on cells

1 Scope and object

This part of IEC 60254 is applicable to lead-acid traction batteries used as power sources for electric propulsion.

The object of the present standard is to specify:

– the maximum external (overall) dimensions of traction battery cells, that is, the width, the height and the length;

– the form of the marking of traction battery cell polarity and dimensions of corresponding symbols;

– the basic dimensions of some commonly used traction battery terminals designed to connect output cables to the battery;

– the dimensions of cells commonly used in Asia and North America.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60417, *Graphical symbols for use on equipment*

3 Main dimensions of traction battery cells

3.1 Standard series

Traction battery cells in accordance with this standard shall belong to one of the following two dimensional series determined by the width:

E (narrow) L (wide)

3.2 External dimensions

3.2.1 The external (overall) dimensions of traction battery cells are represented by the following symbols:

b width (dimension parallel to the surface of the plates);

h height (including lid, vent plugs and terminals, but without output cable);

l length (dimension perpendicular to the surface of the plates).

3.2.2 The dimensions of traction battery cells in accordance with this standard shall correspond to those of Table 1.

Table 1 – Main dimensions of traction battery cells

Series	Width *b* max. mm	Type	Height *h* max. mm	Length series *l* max. mm
E	160	A	300	47, 64, 79
		B	370	95, 111
		C	440	127, 145
		D	510	160, 176
		E	555	192, 208
		G	750	
L	198	B	370	47, 65
		C	440	83, 101
		D	510	119, 137
		E	555	155, 174
		F	605	192
		G	750	

3.3 Cell range prevalent in Asia

For information, the dimensions of traction battery cells in this range are given in Table 2.

NOTE For specific applications see the approprioate Japanese standard.

3.4 Cell range prevalent in North America

For information, the dimensions of traction battery cells in this range are given in Table 3. Width and length only are specified.

NOTE For specific applications see the appropriate USA standard.

Table 2 – Main dimensions of traction battery cells prevalent in Asia

Type	Max. external dimensions mm			Standard dimensions mm												
	Total height	Box height	Width	Length												
B	360	323	160			90	94	109	128	144	161			206		
C	390	353	160			90	94	109	128	144	161		190	206		244
D	435	398	160	60		90	94	109	128	144	161	177	190			244
DH	450	413	160							144	161	177		206		
F	530	493	160	60	75	90		109	128	144		177	190		225	
I	560	523	160	60	75	90		109	128	144	161		190	206	225	244
H	740	703	160	60	75	90	94	109	128	144						

Table 3 – Main dimensions of traction battery cells (vented) prevalent in North America

Plates	Cell footprint			
	Narrow		Wide	
	in	mm	in	mm
5	2,00 × 6,19	50,8 × 157,2		
7	2,75 × 6,19	69,9 × 157,2		
9	3,50 × 6,19	88,9 × 157,2	3,50 × 8,63	88,9 × 219,2
11	4,25 × 6,19	108,0 × 157,2	4,25 × 8,63	108,0 × 219,2
13	5,00 × 6,19	127,0 × 157,2	5,00 × 8,63	127,0 × 219,2
15	5,75 × 6,25	146,1 × 158,8	5,75 × 8,63	146,1 × 219,2
17	6,50 × 6,25	165,1 × 158,8	6,50 × 8,63	165,1 × 219,2
19	7,25 × 6,25	184,2 × 158,8	7,25 × 8,63	184,2 × 219,2
21	8,00 × 6,25	203,2 × 158,8	8,00 × 8,63	203,2 × 219,2
23	8,75 × 6,25	222,3 × 158,8		
25	9,50 × 6,25	241,3 × 158,8		
27	10,25 × 6,25	260,4 × 158,8		
29	11,00 × 6,25	279,4 × 158,8		
31	11,75 × 6,25	298,5 × 158,8		
33	12,50 × 6,25	317,5 × 158,8		

4 Marking of polarity on traction battery cells and dimensions of corresponding symbols

4.1 General provisions for marking of cell polarity

To comply with this standard, traction battery cells shall carry the marking of polarity, at least of the positive terminal.

4.2 Form of marking

The marking shall take the form of the symbol +, indented or in relief, on the lid adjacent to the positive terminal.

If the negative terminal is also marked, the marking shall take the form of the symbol –, indented or in relief, on the lid adjacent to the negative terminal.

4.3 Symbols used for marking and their dimensions

Symbols used for the marking of the polarity shall be in accordance with IEC 60417.

The marking of the positive terminal shall be in accordance with the symbol IEC 60417-5005 (2002-10): plus, positive polarity.

The eventual marking of the negative terminal shall be in accordance with the symbol IEC 60417-5006 (2002-10): minus, negative polarity.

The actual value of dimension "*a*" of these symbols shall be equal to or greater than 5 mm.

NOTE A dimension "*a*" of 5 mm corresponds to a total length of each arm of the symbol equal to 6 mm.

5 Basic dimensions of traction battery terminals

5.1 General provisions for dimensions of battery terminals

This standard gives only basic dimensions of standardized types of battery end terminals necessary to ensure interchangeability. The use of other forms of terminal is not precluded.

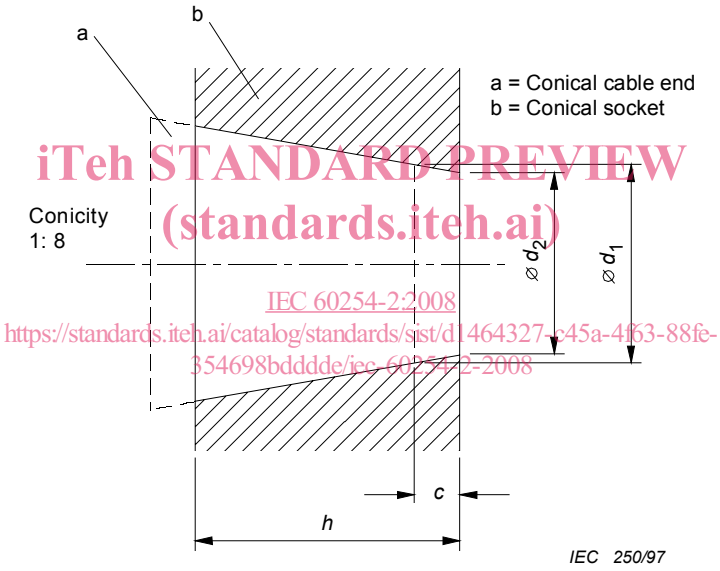
5.2 Conical traction battery terminals

The traction battery terminals shall be chosen from the three types listed in Figure 1, based upon the cross-sectional area of cable used.

5.3 Bolted traction battery terminals

The traction battery cable ends for bolted terminals shall be chosen from the four types listed in Figure 2, based upon the cross-sectional area of cable used.

NOTE For smaller size connections, reference should be made to the dimensions of terminals shown in IEC 60095-2.



Type of terminal	Maximum cable area	Dimensions mm			
	mm²	d_1	h	d_2	c_{max}
A	50	12,5	25,0	13,0	4,0
B	70	14,0	25,0	14,5	4,0
C	95	15,0	36,0	16,0	8,0

Figure 1 – Basic dimensions of conical traction battery terminals