

ISO/TC 114

Secretariat: SNV

Voting begins on:
2021-06-21

Voting terminates on:
2021-08-16

Primary batteries —

Part 3: Watch batteries

Piles électriques —

Partie 3: Piles pour montres

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This draft is submitted to a parallel vote in ISO and in IEC.



Reference number
IEC/FDIS 60086-3:2021(E)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRIMARY BATTERIES –**Part 3: Watch batteries****FOREWORD**

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International Standard IEC 60086-3 has been prepared by IEC technical committee 35: Primary cells and batteries, and ISO technical committee 114: Horology.

This fifth edition cancels and replaces the fourth edition published in 2016. This edition constitutes a technical revision.

This publication is published as a double logo standard.

This edition includes the following significant technical changes with respect to the previous edition:

- a) reformatted Table 1 and Table 2. The reformatted tables are now divided by system. Dimensional tolerances were changed when appropriate. Cell sizes were removed or added based on the size prevalence in the market place;
- b) in Table 3 the minimum values of I_1 were reformatted;
- c) the minimum OCV for the S system in Table 5 was changed to 1,55 V.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
35/1467/FDIS	35/1470/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 60086 series, published under the general title *Primary batteries*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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- withdrawn,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

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INTRODUCTION

This part of IEC 60086 provides specific requirements and information for primary watch batteries. This part of IEC 60086 was prepared through joint work between the IEC and ISO to benefit primary battery users, watch designers and battery manufacturers by ensuring the best compatibility between batteries and watches.

This part of IEC 60086 will remain under continual scrutiny to ensure that the publication is kept up to date with the advances in both battery and watch technologies.

NOTE Safety information is available in IEC 60086-4 and IEC 60086-5.

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PRIMARY BATTERIES –

Part 3: Watch batteries

1 Scope

This part of IEC 60086 specifies dimensions, designation, methods of tests and requirements for primary batteries for watches. In several cases, a menu of test methods is given. When presenting battery electrical characteristics and/or performance data, the manufacturer specifies which test method was used.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60086-1, *Primary batteries – Part 1: General*

IEC 60086-2, *Primary batteries – Part 2: Physical and electrical specifications*

IEC 60086-4, *Primary batteries – Part 4: Safety of lithium batteries*

IEC 60086-5, *Primary batteries – Part 5: Safety of batteries with aqueous electrolyte*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60086-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

capacitive reactance

part of the internal resistance that leads to a voltage drop during the first seconds under load

3.2

capacity

electric charge (quantity of electricity) which a cell or battery can deliver under specified discharge conditions

Note 1 to entry: The SI unit for electric charge is the coulomb (1 C = 1 As) but, in practice, capacity is usually expressed in ampere hours (Ah).

3.3

fresh battery

undischarged battery 60 days maximum after date of manufacture

3.4 ohmic drop

part of the internal resistance that leads to a voltage drop immediately after switching the load on

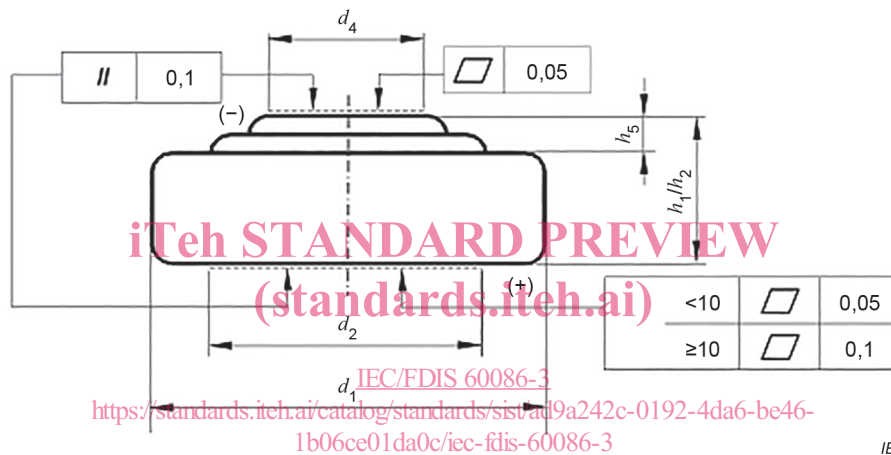
4 Physical requirements

4.1 Battery dimensions, symbols and size codes

Dimensions and tolerances of batteries for watches shall be in accordance with Figure 1, Table 1 and Table 2. The dimensions of the batteries shall be tested in accordance with 7.1.

The symbols used to denote the various dimensions in Figure 1 are in accordance with IEC 60086-2:2021, Clause 4.

Dimensions in millimetres



Key

- h_1 maximum overall height of the battery
- h_2 minimum distance between the flats of the positive and negative contacts
- h_5 minimum projection of the flat negative contact
- d_1 maximum and minimum diameter of the battery
- d_2 minimum diameter of the flat positive contact
- d_4 minimum diameter of the flat negative contact

NOTE This numbering follows the harmonization in the IEC 60086 series.

Figure 1 – Dimensional drawing

Table 1 – Zinc systems L and S dimensions and size codes

Dimensions in millimetres

Diameter		Height h_1/h_2																										
		10	12	14	16	20	21	26	27	30	31	36	42	54														
Code ^a	d_1	Tolerance	Code ^a																									
			Tolerances																									
4	4,8	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	1,05	1,05	1,05	1,65	1,65	1,65	1,65	2,15	2,15	2,15	2,15	2,15	2,60	2,60	2,60	2,70	2,70	3,10	3,10	3,60	3,60	3,60	4,20	4,20	5,40	5,40
5	5,8	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	1,05	1,25	1,25	1,65	1,65	1,65	1,65	2,15	2,15	2,15	2,15	2,15	2,60	2,60	2,60	2,70	2,70	3,10	3,10	3,60	3,60	3,60	4,20	4,20	5,40	5,40
6	6,8	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	1,05	1,25	1,25	1,65	1,65	1,65	1,65	2,15	2,15	2,15	2,15	2,15	2,60	2,60	2,60	2,70	2,70	3,10	3,10	3,60	3,60	3,60	4,20	4,20	5,40	5,40
7	7,9	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	1,05	1,25	1,25	1,65	1,65	1,65	1,65	2,15	2,15	2,15	2,15	2,15	2,60	2,60	2,60	2,70	2,70	3,10	3,10	3,60	3,60	3,60	4,20	4,20	5,40	5,40
9	9,5	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	1,05	1,25	1,25	1,65	1,65	1,65	1,65	2,15	2,15	2,15	2,15	2,15	2,60	2,60	2,60	2,70	2,70	3,10	3,10	3,60	3,60	3,60	4,20	4,20	5,40	5,40
11	11,6	$\begin{matrix} 0 \\ -0,20 \end{matrix}$	1,05	1,25	1,25	1,65	1,65	1,65	1,65	2,15	2,15	2,15	2,15	2,15	2,60	2,60	2,60	2,70	2,70	3,10	3,10	3,60	3,60	3,60	4,20	4,20	5,40	5,40

NOTE Open boxes in the above matrix are not necessarily available for standardization due to the concept of overlapping tolerances.

^a See Annex A.

Table 2 – Lithium systems B and C dimensions and size codes

Dimensions in millimetres

Code ^a	Diameter d_1	Tolerance	Height h_1/h_2							
			Code ^a							
			12	16	20	25	30	32	50	
10	10,0	0 -0,15	0,15	0,18	0,20	0,20	0,20	0,20	0,25	0,30
12	12,5	0 -0,25	1,60	2,00	2,50	2,50	2,50	2,50	3,20	
16	16	0 -0,25	1,60	2,00	2,50	2,50	2,50	2,50	3,20	
20	20	0 -0,25	1,60	2,00	2,50	2,50	2,50	2,50	3,20	
23	23	0 -0,25	1,60	2,00	2,50	2,50	2,50	2,50	3,20	
24	24,5	0 -0,25	8,0	8,0	8,0	8,0	8,0	8,0	8,0	5,00

NOTE Open boxes in the above matrix are not necessarily available for standardization due to the concept of overlapping tolerances.

^a See Annex A.