

Specification for

Dimensions of square cores (RM-cores) made of magnetic oxides and associated parts

The European Standard EN 60431:1997 with the incorporation of
amendment A2:1998 has the status of a British Standard

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Electronic Components Standards Committee (ECL/-) to Technical Committee ECL/20 upon which the following bodies were represented:

- Electronic Components Industry Federation
- Electronic Engineering Association
- Ministry of Defence
- National Supervising Inspectorate
- Telecommunication Engineering and Manufacturing Association (TEMA)

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Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Foreword	2
1 Scope	3
2 Conversion system	3
3 Primary standards	3
4 Derived standards	6
5 Standard inductance measuring coils	10
Appendix A Square core design	13
Appendix B Example of a standard for the main dimensions of coil formers for square cores (RM-cores) meeting the IEC primary standard	14
Appendix C Recommended main dimensions of coil formers for square cores (RM-cores) intended particularly for power applications	15
Appendix D Guidance for measuring coils and clamping forces relevant to square core tests (RM-cores)	17
Annex ZA (normative) Normative references to international publications with their corresponding European publications	Inside back cover
Figure 1 — Pin locations and base outlines viewed from the underside of the board	11
Figure D.1 — Mounting device	19
Table I — Dimensions of square cores	4
Table II — Dimensional limits for wound coil formers	5
Table III — Cut-outs for the pins	6
Table IV — Effective parameter values	7
Table V — Spring recess	8
Table VI — Stud recess	9
Table VII — Dimensions of measuring coils	
Table D.1 — Typical measuring coils for low flux density measurements	17
Table D.2 — Typical measuring coils for power measurements	18
Table D.3 — Typical inner diameters	19
Table D.4 — Recommended clamping forces	19

National foreword

This British Standard has been prepared by Technical Committee EPL/51 (formerly ECL/20) and is the English language version of EN 60431:1997, *Dimensions of square cores (RM-cores) made of magnetic oxides and associated parts*, including amendment A2:1998, published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 431:1993, including amendment 1:1995 and amendment 2:1996, published by the International Electrotechnical Commission (IEC).

The British Standards which implement international or European publications referred to in this document may be found in the BSI *Standards Catalogue* under the section entitled “International Standards Correspondence Index” or using the “Find” facility of the BSI *Standards Electronic Catalogue*.

Additional information. This international text makes reference to “primary standards” (see clause 3) and “derived standards” (see clause 4). The primary standard establishes values for the principal dimensions of the core, leaving open the value of those parameters which are not so easily decided by international consensus. This British Standard does not contain any derived standards and it is not intended to publish any such standards. A sample standard for coil formers is given in Appendix B of the international text.

If for contractual purposes a derived standard is drawn up by a manufacturer or user as described in clause 4 of this British Standard, then whilst the specified component will comply with the requirements of clause 3 for the primary standard and therefore be interchangeable with other such components as assemblies, the parts thereof may not necessarily be interchangeable.

NOTE For example, it may not be desirable or even possible for the adjuster intended to be used with cores complying with one derived standard to be used with cores complying with another derived standard. This may be due to the tolerances on the central hole being significantly different in the two derived standards but both being within the limits of the primary standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 20 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Dimensions of square cores (RM-cores) made of magnetic oxides and associated parts

(includes amendment A2:1998)
(IEC 431:1983 + A1:1995 + A2:1996)

Dimensions des noyaux carrés (noyaux RM) en
oxydes magnétiques et pièces associées
(inclut l'amendement A2:1998)
(CEI 431:1983 + A1:1995 + A2:1996)

Rechteck-Kerne (RM) aus magnetischen
Oxiden Maße und Zubehör
(enthält Änderung A2:1998)
(IEC 431:1983 + A1:1995 + A2:1996)

This European Standard was approved by CENELEC on 1997-03-11; amendment A2 was approved by CENELEC on 1998-08-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The text of the International Standard IEC 431:1983 and its amendment 1:1995, prepared by IEC TC 51, Magnetic components and ferrite materials, was submitted to the formal vote and was approved by CENELEC as EN 60431 on 1997-03-11 without any modification.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1998-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn. (dow) 1998-03-01

Annexes designated “normative” are part of the body of the standard. Annexes designated “informative” are given for information only. In this standard, Annex ZA is normative and Appendix A, Appendix B and Appendix C are informative. Annex ZA has been added by CENELEC.

Foreword to amendment A2

The text of amendment 2:1996 to the International Standard IEC 60431:1983, prepared by IEC TC 51, Magnetic components and ferrite materials, was submitted to the formal vote and was approved by CENELEC as amendment A2 to EN 60431:1997 on 1998-08-01 without any modification.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1999-08-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1999-08-01

Annexes designated “normative” are part of the body of the standard.

Annexes designated “informative” are given for information only.

In this standard, Annex ZA is normative and Appendix D is informative.

Annex ZA has been added by CENELEC.

1 Scope

This standard specifies the dimensions that are of importance for mechanical interchangeability for a preferred range of square cores (RM-cores) made of magnetic oxides, the dimensional limits for wound coil formers to be used with these cores and the locations of their terminal pins on a 2.54 mm printed wiring grid in relation to the base outlines of the cores. It also specifies the main parameters of a range of standard inductance measuring coils to be used for test purposes.

The general considerations upon which the design of this range of cores is based are given in Appendix A.

2 Conversion system

2.1 The original system is the metric system.

2.2 Toleranced dimensions have been converted by applying the rules of Method A of ISO Standard 370¹⁾. No rule is laid down for the conversion of the nominal value, but in cases where the converted dimensions are given as a nominal dimension with symmetrical tolerance, it is normal practice to state that nominal value with the same number of decimal places as the limits.

2.3 Single limit millimetre dimensions (maximum or minimum) are converted by applying the appropriate conversion table of ISO Standard 370 and rounding to two more decimal places than the original value in a given column relating to a particular dimension.

3 Primary standards

Compliance with the following requirements ensures mechanical interchangeability of complete assemblies and wound coil formers.

3.1 Pin locations and base outlines

These shall be as shown in Figure 1, in which the base is viewed from the pin side, i.e. from the underside of the printed wiring boards.

The pins shall fit into holes according to IEC Publication 97: Grid System for Printed Circuits, the nominal hole diameter being:

- 1 mm (0.039 in) when the shortest distance between pins is 2.54 mm (0.1 in).
- 1.3 mm (0.051 in) when the shortest distance between pins is 2.54 $\sqrt{2}$ mm (0.1 $\sqrt{2}$ in) or more.

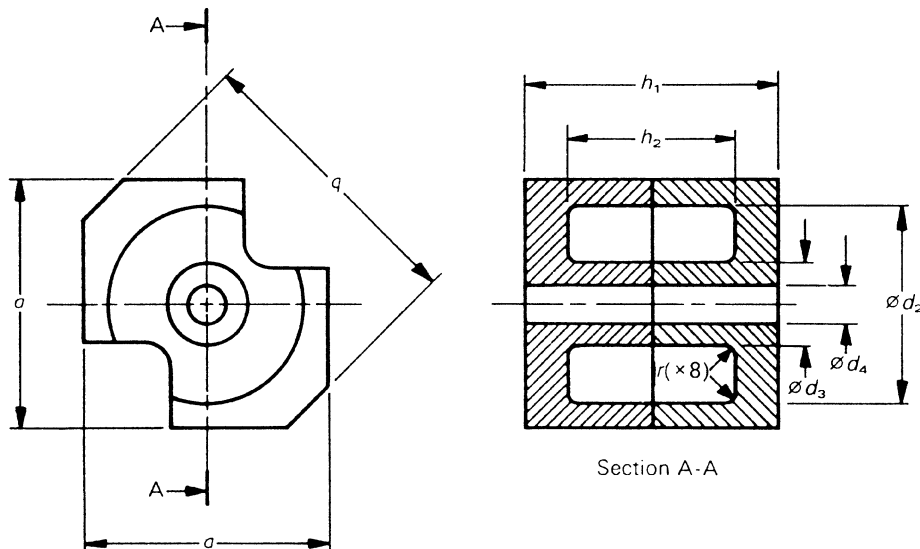
NOTE For power applications, a recommended set of coil formers with corresponding pin locations and base outlines are given in Appendix C.

3.2 Dimensions of square cores

The dimensions shall be as given in Table I.

¹⁾ For practical cases, the converted dimensions will normally be given with not more than three decimal places. The conversion rules may, however, result in more than three decimal places in order to keep the tolerance loss at a minimum. In general, it is left to the users of this standard to apply further rounding, but such further rounding has been introduced where it would not cause the two original millimetre limits to be exceeded by more than 2.5 % of the tolerance (i.e. the difference between the two limits).

Table I — Dimensions of square cores



Size	a		$\varnothing d_2$		$\varnothing d_3$		$\varnothing d_4^a$		q^b	h_1		h_2		r^b	Unit
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Max.	Min.	Max.	Min.	Max.	Max.	
RM4	9,4 0,3700	9,8 0,3858	7,95 0,3287	8,35 0,3130	3,7 0,1456	3,9 0,1535	2,0 0,0787	2,1 0,0827	11,8 0,465	10,3 0,4055	10,5 0,4134	7,0 0,2756	7,4 0,2913	0,3 0,012	mm in
RM5	11,8 0,4645	12,3 0,4843	10,2 0,4016	10,6 0,4173	4,7 0,1850	4,9 0,1929	2,0 0,0787	2,1 0,0827	14,9 0,587	10,3 0,4055	10,5 0,4134	6,3 0,2480	6,7 0,2637	0,3 0,012	mm in
RM6	14,1 0,5551	14,7 0,5787	12,4 0,4882	12,9 0,5078	6,1 0,2401	6,4 0,2520	3,0 0,1181	3,1 0,1220	18,3 0,720	12,3 0,4843	12,5 0,4921	8,0 0,3150	8,4 0,3307	0,3 0,012	mm in
RM7	16,5 0,6496	17,2 0,6772	14,75 0,5807	15,4 0,6062	6,95 0,2736	7,25 0,2854	3,0 0,1181	3,1 0,1220	20,3 0,799	13,3 0,5236	13,5 0,5315	8,4 0,3307	8,9 0,3503	0,3 0,012	mm in
RM8	18,9 0,7440	19,7 0,7756	17,00 0,6693	17,7 0,6968	8,25 0,3248	8,55 0,3366	4,4 0,1732	4,6 0,1811	23,2 0,913	16,3 0,6417	16,5 0,6498	10,8 0,4252	11,3 0,4448	0,3 0,012	mm in
RM10	23,6 0,9291	24,7 0,9724	21,2 0,8346	22,1 0,8700	10,5 0,4133	10,9 0,4291	5,4 0,2126	5,6 0,2205	28,5 1,122	18,5 0,7283	18,7 0,7362	12,4 0,4882	13,0 0,5118	0,3 0,012	mm in
RM12	28,7 1,1299	29,8 1,1732	25,0 0,9843	26,0 1,0236	12,3 0,4843	12,8 0,5039	— —	— —	37,4 1,4724	24,4 0,9606	24,6 0,9685	16,8 0,6614	17,4 0,6850	0,3 0,012	mm in
RM14	33,5 1,3188	34,7 1,3661	29,0 1,1417	30,2 1,1889	14,4 0,5669	15,0 0,5906	5,4 0,2126	5,6 0,2205	42,2 1,661	28,8 1,1339	29,0 1,1417	20,8 0,8189	21,4 0,8425	0,3 0,012	mm in
RM14A	33,5 1,3188	34,7 1,3661	29,0 1,1417	30,2 1,1889	14,4 0,5669	15,0 0,5908	— —	— —	42,2 1,6614	30,0 1,1811	30,2 1,1890	20,8 0,8190	21,4 0,8425	0,3 0,012	mm in

^a Any further tightening of the tolerance should be done towards the maximum limit of the present tolerance zone. Cores without centre hole are also permitted; this may be desirable when cores are required to have high effective permeabilities.

^b Where no tolerance is given in the table, normal manufacturing tolerances should be used.