

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Ferrite cores – Dimensions –
Part 4: RM-cores and associated parts**

**Noyaux ferrites – Dimensions –
Partie 4: Noyaux RM et pièces associées**

IEC 62317-4:2005

<https://standards.iteh.ai/standards/iec/9/5ea9647a-4648-4820-88b8-5ea63ab6e021/iec-62317-4-2005>



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CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	5
3 Primary standards.....	5
3.1 Pin locations and base outlines.....	5
3.2 Dimensions of RM-cores.....	5
3.3 Shape of coil former and pin numbering.....	6
3.4 Effective parameter values.....	6
3.5 Spring recess.....	6
3.6 Stud recess.....	6
4 Derived standards.....	10
5 Main dimensions for coil formers.....	13
5.1 RM-cores for primary standard.....	13
5.2 RM-cores intended particularly for power applications.....	15
Annex A (informative) RM-core design.....	18
Annex B (normative) Guidance for measuring clamping forces relevant to RM-core tests.....	20
Bibliography.....	22
Figure 1 – Dimensions of RM-cores.....	7
Figure 2 – Dimensions of low-profile RM-cores.....	8
Figure 3 – Dimensions of spring recess.....	11
Figure 4 – Dimensions of stud recess.....	12
Figure 5 – Main dimensions of coil formers for RM-cores.....	13
Figure 6 – Pin locations and base outlines viewed from the underside of the board.....	14
Figure 7 – Dimensions of specific features.....	16
Figure 8 – Pin locations and base outlines viewed from the underside of the board.....	17
Figure B.1 – Mounting device.....	20
Table 1 – Dimensions of RM-cores.....	7
Table 2 – Dimensions of low-profile RM-cores.....	8
Table 3 – Effective parameter and A_{\min} values for RM-cores.....	9
Table 4 – Effective parameter and A_{\min} values for low-profile RM-cores.....	9
Table 5 – Spring recess.....	11
Table 6 – Stud recess.....	12
Table 7 – Main dimensions of coil formers for RM-cores.....	13
Table 8 – Main dimensions of coil formers for low-profile RM-cores.....	13
Table 9 – Dimensions of specific features.....	16
Table B.1 – Inner diameters and recommended clamping forces.....	21

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FERRITE CORES – DIMENSIONS –

Part 4: RM-cores and associated parts

FOREWORD

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International Standard IEC 62317-4 has been prepared IEC technical committee 51: Magnetic components and ferrite materials.

This international standard cancels and replaces the second edition of IEC 60431 published in 1983, its amendment 1 (1995), and its amendment 2 (1996). This international standard constitutes a technical revision of IEC 60431.

This bilingual version (2011-07) replaces the English version.

The main changes with respect to the previous edition of IEC 60431 are listed below:

- low-profile RM-cores at present defined in IEC 61860 are added to this standard.

IEC 61860 will eventually be replaced by IEC 62317-9 which is under consideration. IEC 62317-9 will not include the low-profile RM-cores.

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

FDIS	Report on voting
51/833/FDIS	51/839/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.

The French version of this standard has not been voted upon.

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

IEC 62317 consists of the following parts, under the general title *Ferrite cores – Dimensions*:

- Part 1: General (under consideration)
- Part 2: Pot cores (under consideration, currently available as IEC 60133)
- Part 3: Half pot cores (under consideration, currently available as IEC 62323)
- Part 4: RM-cores and associated parts
- Part 5: EP-cores (under consideration, currently available as IEC 61596)
- Part 6: ETD-cores (under consideration, currently available as IEC 61185)
- Part 7: EER-cores
- Part 8: E-cores
- Part 9: Planar cores
- Part 10: PM-cores (under consideration, currently available as IEC 61247)
- Part 11: EC-cores (under consideration, currently available as IEC 60647)
- Part 12: Uncoated ring cores (under consideration, currently available as IEC 61604)

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

The contents of the corrigendum of July 2016 have been included in this copy.

FERRITE CORES – DIMENSIONS –

Part 4: RM-cores and associated parts

1 Scope

This part of IEC 62317 specifies the dimensions that are of importance for mechanical interchangeability for a preferred range of RM-cores and low-profile RM-cores made of ferrite, 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 test conditions and clamping forces to be used for inductance measurement.

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

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 60097:1991, *Grid system for printed circuits*

IEC 60205:2001, *Calculation of the effective parameters of magnetic piece parts*

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 6 and Figure 8 (for power applications), 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 60097, the nominal hole diameter being:

- 1 mm when the shortest distance between pins is 2,54 mm;
- 1,3 mm when the shortest distance between pins is $2,54\sqrt{2}$ mm or more.

3.2 Dimensions of RM-cores

The dimensions of RM-cores shall be as given in Table 1 and the low-profile RM-cores shall be as given in Table 2.

3.3 Shape of coil former and pin numbering

When the coil former is viewed from the pin side, the pins shall be numbered in a clockwise direction. Pin 1 shall be a corner pin, or the pin immediately to the right of a corner, and closest to the base outline.

For asymmetrical arrangements, pin 1 shall be at the side with the largest number of pins. The coil former shall show an asymmetry which shall preferably be visible (or detectable) when the assembled inductor is held with the pins downwards. This asymmetry shall clearly indicate pin 1. For pin numbering of recommended core patterns and for recommended asymmetrical pin arrangements, see 3.1.

NOTE It is not required that the pin numbers be marked on the coil former.

3.4 Effective parameter values

The effective parameter values for cores having the dimensions given in 3.2 and 3.5 are as shown in Table 3 and Table 4.

3.5 Spring recess

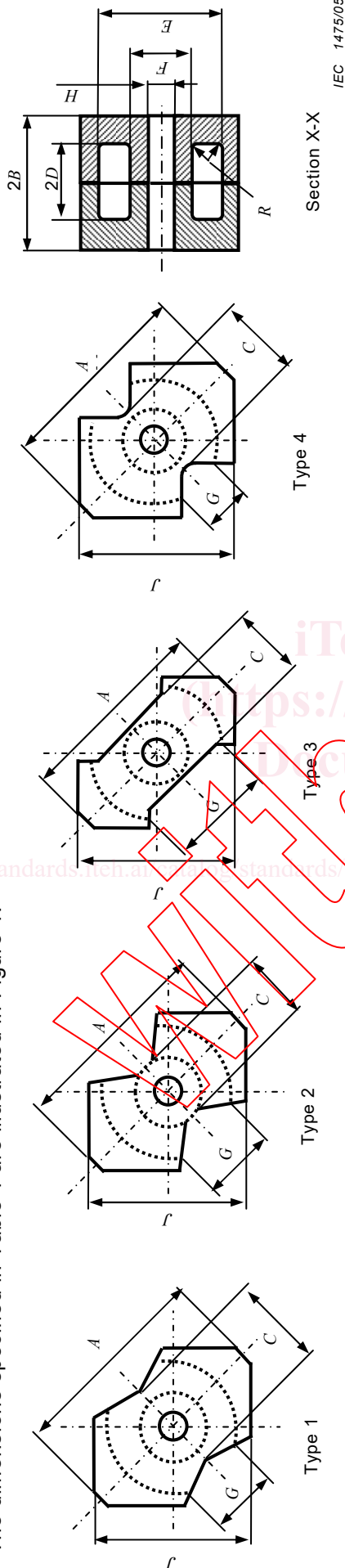
RM-cores shall have recesses which allow the core halves to be held together by two spring clamps snapping into these recesses. The recesses consist of a flat spring rest and a locking ridge. The dimensions are given in Table 5; the profile of this spring recess is not defined but the limit dimensions shall be complied with.

3.6 Stud recess

Those RM-cores with centerpost holes may have recesses for the fixed part of the adjusting device with dimensions in accordance with Table 6. These dimensions are not mandatory for manufacturers who supply cores with the fixed part of the adjusting device attached.

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IEC 1475/05

Figure 1 – Dimensions of RM-cores

Table 1 – Dimensions of RM-cores

Size	A mm		B mm		C mm		D mm		E mm		F mm		G mm		H ^{a)} mm		J mm		R mm		Type
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
RM 4	10,6	11,8	5,15	5,25	4,40	4,60	3,50	3,70	7,95	8,35	3,70	3,90	5,80	5,80	2,0	2,1	9,40	9,80	0,3	0,3	3
RM 5	14,0	14,9	5,15	5,25	6,40	6,80	3,15	3,35	10,2	10,6	4,70	4,90	6,00	6,00	2,0	2,1	11,8	12,3	0,3	0,3	3
RM 6-S	17,2	18,3	6,15	6,25	7,80	8,20	4,00	4,20	12,4	12,9	6,10	6,40	8,40	8,40	3,0	3,1	14,1	14,7	0,3	0,3	1
RM 6-R	17,2	18,3	6,15	6,25	7,00	7,40	4,00	4,20	12,4	12,9	6,10	6,40	6,30	6,30	3,0	3,1	14,1	14,7	0,3	0,3	4
RM 7	19,5	20,3	6,65	6,75	6,95	7,25	4,20	4,45	14,75	15,4	6,95	7,25	9,30	9,30	3,0	3,1	16,5	17,2	0,3	0,3	2
RM 8	22,3	23,2	8,15	8,25	10,6	11,0	5,40	5,65	17,0	17,7	8,25	8,55	9,50	9,50	4,4	4,6	18,9	19,7	0,3	0,3	3
RM 10	27,2	28,5	9,25	9,35	13,0	13,5	6,20	6,50	21,2	22,1	10,5	10,9	10,9	10,9	5,4	5,6	23,6	24,7	0,3	0,3	3
RM 12	36,1	37,4	12,2	12,3	15,6	16,1	8,40	8,70	25,0	26,0	12,3	12,8	12,9	12,9	-	-	28,7	29,8	0,3	0,3	3
RM 14	40,8	42,2	14,4	14,5	18,4	19,0	10,4	10,7	29,0	30,2	14,4	15,0	17,0	17,0	5,4	5,6	33,5	34,7	0,3	0,3	3
RM 14A	40,8	42,2	15,0	15,1	18,4	19,0	10,4	10,7	29,0	30,2	14,4	15,0	17,0	17,0	-	-	33,5	34,7	0,3	0,3	3

a) Solid centerpost cores are available for each size.

The dimensions specified in Table 2 are illustrated in Figure 2.

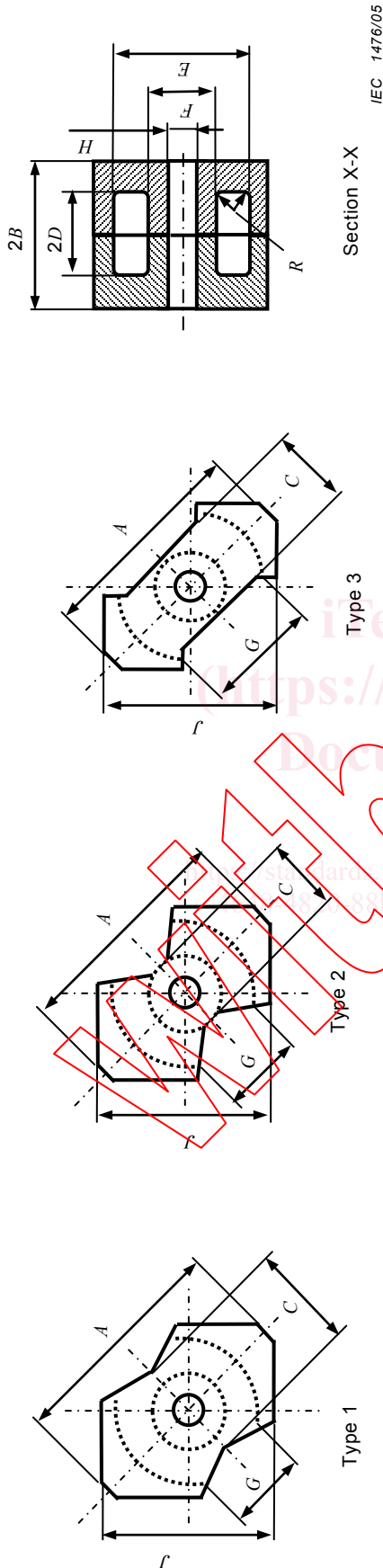


Figure 2 – Dimensions of low-profile RM-cores

Table 2 – Dimensions of low-profile RM-cores

Size	A mm		B mm		C mm		D mm		E mm		F mm		G mm	H ^{a)} mm		J mm		R mm	Type
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Max.	Max.	
RM 4/8	10,6	11,8	3,80	3,90	4,40	4,60	2,15	2,35	7,95	8,35	3,70	3,90	5,3	2,0	2,1	9,40	9,80	0,3	3
RM 5/8	14,0	14,9	3,80	3,90	6,40	6,80	1,80	2,00	10,2	10,6	4,70	4,90	6,0	2,0	2,1	11,8	12,3	0,3	3
RM 6/9	17,2	18,3	4,40	4,50	7,80	8,20	2,25	2,45	12,4	12,9	6,10	6,40	8,4	3,0	3,1	14,1	14,7	0,3	1
RM 7/10	19,5	20,3	4,80	4,90	6,95	7,25	2,35	2,60	14,75	15,4	6,95	7,25	9,3	3,0	3,1	16,5	17,2	0,3	2
RM 8/11	22,3	23,2	5,70	5,80	10,6	11,0	2,95	3,15	17,0	17,7	8,25	8,55	9,5	4,4	4,6	18,9	19,7	0,3	3
RM 10/13	27,2	28,5	6,40	6,50	13,0	13,5	3,35	3,55	21,2	22,1	10,5	10,9	10,9	5,4	5,6	23,6	24,7	0,3	3
RM 12/17	36,1	37,4	8,30	8,40	15,6	16,1	4,50	4,75	25,0	26,0	12,3	12,8	12,9	5,4	5,6	28,7	29,8	0,3	3
RM 14/20	40,8	42,2	10,15	10,25	18,4	19,0	5,55	5,85	29,0	30,2	14,4	15,0	17,0	5,4	5,6	33,5	34,7	0,3	3

a) Solid centerpost cores are available for each size.

Table 3 – Effective parameter and A_{\min} values for RM-cores

Size	with hole \emptyset no hole \emptyset	C_1 mm ⁻¹	C_2 mm ⁻³	l_e mm	A_e mm ²	V_e mm ³	$A_{\min}^a)$ mm ²
RM 4	O	1,889 4	$172,74 \times 10^{-3}$	20,7	10,9	226	8,04
	\emptyset	1,633 0	$116,54 \times 10^{-3}$	22,9	14,0	321	11,3
RM 5	O	1,021 0	$49,866 \times 10^{-3}$	20,9	20,5	430	14,8
	\emptyset	0,943 15	$39,774 \times 10^{-3}$	22,4	23,7	530	18,1
RM 6-S	O	0,897 83	$29,592 \times 10^{-3}$	27,2	30,3	830	23,4
	\emptyset	0,816 68	$23,099 \times 10^{-3}$	28,9	35,4	1 020	30,7
RM 6-R	O	0,821 49	$25,728 \times 10^{-3}$	25,7	31,3	810	23,4
	\emptyset	0,740 34	$19,737 \times 10^{-3}$	27,8	37,5	1 040	30,7
RM 7	O	0,720 27	$17,389 \times 10^{-3}$	29,8	41,4	1 240	32,3
	\emptyset	0,672 53	$14,509 \times 10^{-3}$	31,2	46,4	1 450	39,6
RM 8	O	0,685 47	$13,238 \times 10^{-3}$	35,5	51,8	1 840	40,0
	\emptyset	0,607 35	$9,650 5 \times 10^{-3}$	38,2	62,9	2 410	55,0
RM 10	O	0,504 94	$6,021 9 \times 10^{-3}$	42,3	83,9	3 550	66,0
	\emptyset	0,455 90	$4,634 7 \times 10^{-3}$	44,8	98,4	4 410	90,0
RM 12	\emptyset	0,384 35	$2,623 1 \times 10^{-3}$	56,3	147	8 250	125
RM 14	O	0,382 77	$2,185 7 \times 10^{-3}$	67,0	175	11 700	146
	\emptyset	0,363 24	$1,916 8 \times 10^{-3}$	68,8	189	13 000	170
RM 14A	\emptyset	0,351 03	$1,766 7 \times 10^{-3}$	69,7	199	13 900	170

a) See 2.2 of IEC 60205 for the definition of A_{\min} .

NOTE The manufacturers may indicate in their catalogues more precise values than those given in the above table.

Table 4 – Effective parameter and A_{\min} values for low-profile RM-cores

Size	with hole \emptyset no hole \emptyset	C_1 mm ⁻¹	C_2 mm ⁻³	l_e mm	A_e mm ²	V_e mm ³	$A_{\min}^a)$ mm ²
RM 4/8	O	1,363 7	$117,98 \times 10^{-3}$	15,8	11,6	182	8,04
	\emptyset	1,205 0	$82,549 \times 10^{-3}$	17,6	14,6	257	11,3
RM 5/8	O	0,748 38	$34,487 \times 10^{-3}$	16,2	21,7	352	14,8
	\emptyset	0,703 79	$28,484 \times 10^{-3}$	17,4	24,7	430	18,1
RM 6/9	O	0,656 34	$20,781 \times 10^{-3}$	20,7	31,6	655	23,4
	\emptyset	0,610 85	$16,976 \times 10^{-3}$	22,0	36,0	791	31,2
RM 7/10	O	0,528 24	$12,220 \times 10^{-3}$	22,8	43,2	987	32,3
	\emptyset	0,501 64	$10,529 \times 10^{-3}$	23,9	47,6	1 140	39,6
RM 8/11	O	0,479 06	$8,726 5 \times 10^{-3}$	26,3	54,9	1 440	39,5
	\emptyset	0,436 89	$6,699 3 \times 10^{-3}$	28,5	65,2	1 860	55,4
RM 10/13	O	0,359 49	$4,109 9 \times 10^{-3}$	31,4	87,5	2 750	66,2
	\emptyset	0,333 60	$3,331 6 \times 10^{-3}$	33,4	100	3 340	89,9
RM 12/17	O	0,295 78	$2,227 5 \times 10^{-3}$	39,3	133	5 220	99,9
	\emptyset	0,279 06	$1,883 9 \times 10^{-3}$	41,3	148	6 120	125
RM 14/20	O	0,263 67	$1,409 7 \times 10^{-3}$	49,3	187	9 920	146
	\emptyset	0,253 40	$1,261 1 \times 10^{-3}$	50,9	201	10 200	170

a) See 2.2 of IEC 60205 for the definition of A_{\min} .

NOTE The manufacturers may indicate in their catalogues more precise values than those given in the above table.

4 Derived standards

Parties interested in making or using RM-cores may find it desirable to lay down local standards for everyday use. These may show the dimensions in greater detail than Clause 3, and may correspond to the state of art in that area. When doing so, care should be taken not to exclude any other type of RM-core which meets the IEC primary standard and which also meets the requirements of the user.

When a national standard is prepared, the relevant national standardization body is strongly requested to insert a note stating that:

- a) the standard is in accordance with the dimensional standard of this part of IEC 62317 but that more details are given in order to promote the practical use of the standard;
- b) other solutions are possible within the framework of this part of IEC 62317 and should not be excluded if such cores and formers are functionally interchangeable with those according to the national standard.

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