BS EN 61605:2017

BSI Standards Publication

Fixed inductors for use in electronic and telecommunication equipment — Marking codes

bsi.

National foreword

This British Standard is the UK implementation of EN 61605:2017. It is identical to IEC 61605:2016. It supersedes BS EN 61605:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/51, Transformers, inductors, magnetic components and ferrite materials.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Date	Text affected

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NORME EUROPÉENNE

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EN 61605

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English Version

Fixed inductors for use in electronic and telecommunication equipment - Marking codes (IEC 61605:2016)

Inductances fixes utilisées dans les équipements électroniques et de télécommunications - Codes pour le marquage (IEC 61605:2016)

Festinduktivitäten für elektrische und nachrichtentechnische Einrichtungen - Kennzeichnungen (IEC 61605:2016)

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European foreword

The text of document 51/1135/CDV, future edition 3 of IEC 61605, prepared by IEC/TC 51 "Magnetic components, ferrite and magnetic powder materials" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61605:2017.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2017-08-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-11-30

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In the official version, for Bibliography, the following note has to be added for the standard indicated :

IEC 60063	NOTE	Harmonized as EN 60063.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
ISO 8601	-	Data elements and interchange formats - Information interchange - Representation of dates and times	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FIXED INDUCTORS FOR USE IN ELECTRONIC AND TELECOMMUNICATION EQUIPMENT – MARKING CODES

FOREWORD

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International Standard IEC 61605 has been prepared by IEC technical committee 51: Magnetic components and ferrite materials.

This third edition cancels and replaces the second edition published in 2005. This edition constitutes a technical revision.

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

a) The date code system for fixed inductors has been updated.

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

CDV	Report on voting
51/1135/CDV	51/1147/RVC

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.

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.

A bilingual version of this publication may be issued at a later date.

FIXED INDUCTORS FOR USE IN ELECTRONIC AND TELECOMMUNICATION EQUIPMENT – MARKING CODES

1 Scope

This document specifies marking codes for fixed inductors.

The colour code specified in Clause 3 gives a colour coding for fixed inductors. It is intended for use with the values of the E3 to E24 series as specified in IEC 60063.

The code specified in Clause 4 gives a system for marking inductance values by means of digits and letters.

The code specified in Clause 5 gives a system for marking the tolerance on inductance values by means of letters.

The code specified in Clause 6 gives a system for marking of date codes on fixed inductors by means of letters and digits.

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.

ISO 8601, *Data elements and interchange formats – Information interchange – Representation of dates and times*

3 Colour code for fixed inductors

3.1 General rules

Colour codes for fixed inductors should be expressed in “bands”. If other shapes than bands are applied, the relevant specification shall prescribe their configuration, placement and identification.

Colour codes for fixed inductors shall consist of four bands. The first three bands shall indicate inductance values and the last band shall indicate tolerances.

Inductance values shall be expressed by two significant figures and another figure expressing multipliers.

Colour corresponding to significant figures, multipliers and tolerances shall be as given in Table 1.

The first two bands represent significant figures and the third band specifies the multiplier. The basic unit for the inductance value shall be expressed in μH. The first band shall be the one nearest to the end of the inductor and the bands shall be so placed and spaced that there can be no confusion in reading the coding.

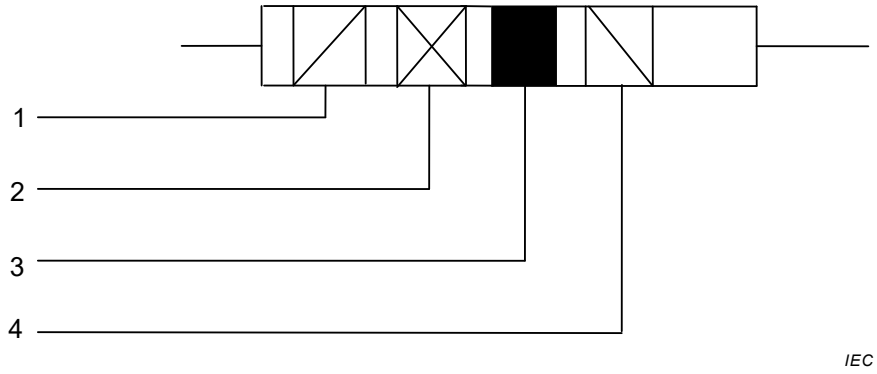
Any additional coding on fixed inductors shall be applied in such a way as not to confuse the coding for value and tolerance.

Table 1 – Values corresponding to colours

Colour	Significant figure	Multiplier	Tolerance %
Silver	–	10^{-2}	± 10
Gold	–	10^{-1}	± 5
Black	0	10^{0}	–
Brown	1	10^{1}	± 1
Red	2	10^{2}	± 2
Orange	3	10^{3}	–
Yellow	4	10^{4}	–
Green	5	10^{5}	–
Blue	6	10^{6}	–
Violet	7	10^{-3}	–
Grey	8	10^{-4}	–
White	9	–	–
None	–	–	± 20

3.2 Examples of colour code for fixed inductors

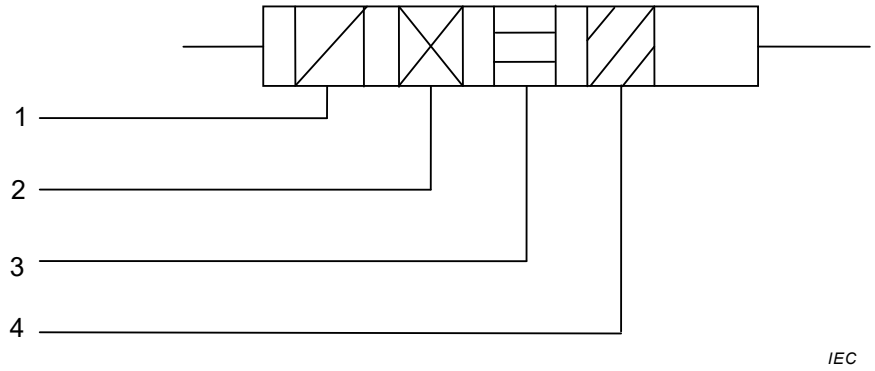
The examples of colour code for fixed inductors are shown in Figure 1, Figure 2 and Figure 3.



Key:

1:	1st band	1st numeral	Yellow = 4
2:	2nd band	2nd numeral	Violet = 7
3:	3rd band	Multiplier	Black = × 10^{0}
4:	4th band	Tolerance	Silver = ± 10 %

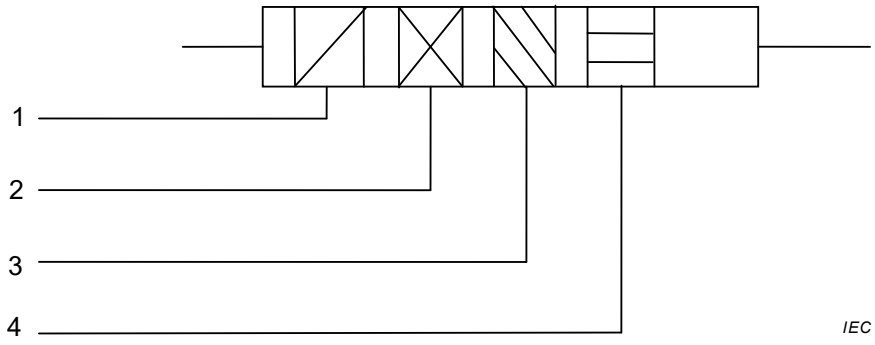
Figure 1 – Example for 47 µH ± 10 %



Key:

1:	1st band	1st numeral	Yellow = 4
2:	2nd band	2nd numeral	Violet = 7
3:	3rd band	Multiplier	Gold = × 10^{-1}
4:	4th band	Tolerance	Red = ± 2 %

Figure 2 – Example for 4,7 µH ± 2 %



Key:

1:	1st band	1st numeral	Yellow = 4
2:	2nd band	2nd numeral	Violet = 7
3:	3rd band	Multiplier	Grey = × 10^{-4}
4:	4th band	Tolerance	Gold = ± 5 %

Figure 3 – Example for 4,7 nH ± 5 %

4 Digit and letter code for inductance values

4.1 General rules

Nominal inductance values shall be expressed in three characters of letters and digits.

Where inductance values are equal to, or greater than, 10 µH, the first two characters indicate significant figures and the last one indicates multipliers. In this case, cardinal numbers for the multiplier shall be as given in Table 2.

Table 2 – Cardinal numbers for the multiplier

Cardinal number	0	1	2	3	4	5	6	7	8	9	–
Multiplier	10^0	10^1	10^2	10^3	10^4	10^5	10^6	–	–	–	–

Inductance values less than 10 μH and equal to, or greater than, 100 nH shall be identified with two numbers representing the significant figures and the letter (R) designating decimal point location μH, and the letter (N) designating decimal point location of nH for the inductance value of less than 100 nH.

4.2 Examples of digit and letter code for inductance values

Examples of digit and letter code for inductance values are shown in Table 3.

Table 3 – Examples of digit and letter code for inductance values

Inductance values	Digit and letter code
0,1 nH	N10
0,47 nH	N47
1 nH	1N0
4,7 nH	4N7
10 nH	10N
47 nH	47N
0,1 μH	R10
0,47 μH	R47
1 μH	1R0
4,7 μH	4R7
10 μH	100
47 μH	470
100 μH	101
470 μH	471
1 mH	102
4,7 mH	472
10 mH	103
47 mH	473
100 mH	104
470 mH	474
1 H	105
4,7 H	475
10 H	106
47 H	476

5 Letter code for tolerances of inductance values

5.1 Symmetrical tolerances

The letter codes shown in Table 4 shall be used to indicate the symmetrical tolerance on inductance values.

Table 4 – Letter code for symmetrical tolerance

Tolerance	Letter code
± 0,05 nH	W
± 0,1 nH	B
± 0,2 nH	C
± 0,3 nH	S
± 0,5 nH	D
± 1 %	F
± 2 %	G
± 3 %	H
± 5 %	J
± 10 %	K
± 15 %	L
± 20 %	M
± 30 %	N

These letter codes shall be placed after the inductance values.

5.2 Other tolerances

For tolerances for which a code letter has not been laid down, the letter A may be used. The letter A indicates that the tolerance is to be identified in other documents.

6 Date code system for fixed inductors

6.1 Single-character code for year and month

Date codes of year and month in single-character shall be expressed in the code system shown in Table 5 and should be repeated every four years.

Table 5 – Single-character code for year and month for a four-year cycle

Year	Month	Letter	Year	Month	Letter	Year	Month	Letter	Year	Month	Letter
2001	Jan.	A	2002	Jan.	N	2003	Jan.	a	2004	Jan.	n
2005	Feb.	B	2006	Feb.	P	2007	Feb.	b	2008	Feb.	p
2009	Mar.	C	2010	Mar.	Q	2011	Mar.	c	2012	Mar.	q
2013	Apr.	D	2014	Apr.	R	2015	Apr.	d	2016	Apr.	r
2017	May	E	2018	May	S	2019	May	e	2020	May	s
2021	Jun.	F	2022	Jun.	T	2023	Jun.	f	2024	Jun.	t
2025	Jul.	G	2026	Jul.	U	2027	Jul.	g	2028	Jul.	u
2029	Aug.	H	2030	Aug.	V	2031	Aug.	h	2032	Aug.	v
2033	Sep.	J	2034	Sep.	W	2035	Sep.	j	2036	Sep.	w
2037	Oct.	K	2038	Oct.	X	2039	Oct.	k	2040	Oct.	x
·	Nov.	L	·	Nov.	Y	·	Nov.	l	·	Nov.	y
·	Dec.	M	·	Dec.	Z	·	Dec.	m	·	Dec.	z

NOTE 1 Those codes which indicate the year and month with one capital letter and small letter, except “I” and “O”, repeat after each cycle of four years.

NOTE 2 If there is a possibility that a single lower-case letter could be read as an upper-case letter, for example, v for V, the lower-case letter could be marked with a cross bar above it.

The examples for Table 5 are shown as follows:

June 2016 = t

November 2017 = L

6.2 Two-character code for year and month

Where the date codes of the year and month of the manufacture are required as two-character codes, the code system shown in Table 6 and Table 7 shall be used.

Table 6 – Code letter for year in a twenty-year cycle

Year	Letter	Year	Letter	Year	Letter	Year	Letter	Year	Letter
|	|	2017	J	2026	U	2035	F	2044	S
↓	↓	2018	K	2027	V	2036	H	2045	T
2010	A	2019	L	2028	W	2037	J	2046	U
2011	B	2020	M	2029	X	2038	K	2047	V
2012	C	2021	N	2030	A	2039	L	2048	W
2013	D	2022	P	2031	B	2040	M	2049	X
2014	E	2023	R	2032	C	2041	N	2050	A
2015	F	2024	S	2033	D	2042	P	|	|
2016	H	2025	T	2034	E	2043	R	↓	↓

NOTE These codes, which indicate the year, repeat after each cycle of 20 years.

Table 7 – Character code letter for month

Month	Character	Month	Character
January	1	July	7
February	2	August	8
March	3	September	9
April	4	October	O
May	5	November	N
June	6	December	D

The examples for Table 6 and Table 7 are shown as follows:

March 2023 = R3

November 2025 = TN

6.3 Four-character code for year and week

Where the date codes of the year and week of manufacture are required, the code system shall use four figures. The first two figures shall be the last two figures of the year and the last two figures shall be the numbering of the week. The numbering of the week shall be in accordance with ISO 8601, as follows:

Tenth week of 2019 = 1910

Forty-second week of 2024 = 2442

Bibliography

IEC 60063, *Preferred number series for resistors and capacitors*

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