
Aeronavtika - Eno- ali večžilni električni kabli za splošno uporabo - Delovne temperature med -55 °C in 200 °C - 012. del: MNA (1 jedro), MNB (združitev), MNC (3 jedra), MND (4 jedra), družina kablov - Posrebren baker, oklopljen (spirala) in oplaščen, z možnostjo UV-laserskega tiskanja - Standard za proizvod

Aerospace series - Cables, electrical, single and multicore for general purpose - Operating temperatures between -55 °C and 200 °C - Part 012: MNA (1 core), MNB (pair), MNC (3 cores), MND (4 cores), cables family - Silver plated copper screened (spiral) and jacketed, UV laser printable - Product standard

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Luft- und Raumfahrt - Leitungen, elektrisch, ein- und mehradrig, für allgemeine Verwendung - Betriebstemperaturen zwischen -55 °C und 200 °C - Teil 012: MNA- (einadrig), MNB- (zweiadrig), MNC- (dreiadrig), MND- (vieradrig) Leitungsfamilie - mit versilbertem Kupfergeflecht geschirmt (Umseilung) und ummantelt, UV-Laserbedruckbar - Produktnorm

Série aérospatiale - Câbles, électriques, mono et multiconducteurs d'usage général - Températures de fonctionnement comprises entre -55 °C et 200 °C - Partie 012: MNA (1 élément), MNB (paire), MNC (tierce), MND (quarte), série de câbles multiconducteurs à blindage cuivre argenté (guipés et gainés), marquables au laser UV - Norme de produit

Ta slovenski standard je istoveten z: EN 2713-012:2017

ICS:

29.060.20	Kabli	Cables
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

SIST EN 2713-012:2017

en,fr,de

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EUROPEAN STANDARD

EN 2713-012

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2017

ICS 49.060

English Version

Aerospace series - Cables, electrical, single and multicore for general purpose - Operating temperatures between -55 °C and 200 °C - Part 012: MNA (1 core), MNB (pair), MNC (3 cores), MND (4 cores), cables family - Silver plated copper screened (spiral) and jacketed, UV laser printable - Product standard

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This European Standard was approved by CEN on 2 January 2017.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 2713-012:2017) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2017, and conflicting national standards shall be withdrawn at the latest by September 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 2713-012:2017 (E)**1 Scope**

This European Standard specifies the characteristics of UV laser printable, single and multicore silver plated copper screened (spiral) and jacketed electrical cables for use in the on-board electrical systems of aircraft, at operating temperatures between – 55 °C and 200 °C.

It shall also be possible to mark these cables by qualified compatible marking. These markings shall be in accordance with EN 3838.

2 Normative references

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.

EN 2235, *Aerospace series — Single and multicore electrical cables, screened and jacketed — Technical specification*

EN 2267-009, *Aerospace series — Cables, electrical, for general purpose — Operating temperatures between – 55 °C and 260 °C — Part 009: DRA family, single and multicore assembly — Product standard*

EN 2713-002, *Aerospace series — Cables, electrical, single and multicore for general purpose — Operating temperatures between – 55 °C and 200 °C — Part 002: Screened and jacketed — General*

EN 3475 (series), *Aerospace series — Cables, electrical, aircraft use — Test methods*

EN 3838, *Aerospace series — Requirements and tests on user-applied markings on aircraft electrical cables*
<https://standards.iteh.ai/catalog/standards/sist/0ba8f092-7f29-4b57-8c7e-9f07a92ef00f/sist-en-2713-012-2017>

EN 4434, *Aerospace series — Copper or copper alloy lightweight conductors for electrical cables — Product standard (Normal and tight tolerances)*

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standard parts*

3 Terms, definitions and symbols

For the purposes of this document, the terms, definitions and symbols given in EN 3475-100 apply.

4 Materials and construction

4.1 Materials

These cables shall consist of the following:

- cores according to EN 2267-009,
- number of cores 1 to 4.

2 to 4-core cables shall be twisted together according to EN 2235.

Screen:

- silver-plated copper stranded spiral screen;
- for dimensions of strands, see Table 1;
- material according to EN 4434, tests according to EN 3475-100;
- construction according to EN 2235.

Outer jacket:

- Shall be defined to satisfy all required characteristics of Clause 5.

4.2 Construction

See EN 4434 and Table 1.

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Table 1

Number of cores	Code for nominal section	Nominal section	AWG ^a	Linear resistance at 20 °C	Screen strands nominal diameter	External diameter	Mass
		mm ²		Ω/km max.	mm	mm max.	kg/km max.
1	001	0,15	26	160,00	0,08	1,23	4,45
	002	0,25	24	114,00	0,08	1,35	5,30
	004	0,4	22	60,00	0,08	1,49	7,16
	006	0,6	20	33,20	0,08	1,73	10,53
	010	1	18	21,10	0,08	2,00	14,90
	012	1,2	16	14,50	0,1	2,35	20,82
	020	2	14	10,90	0,1	2,66	26,54
	030	3	12	6,80	0,1	3,13	39,75
	051	5	10	4,10	0,1	3,76	60,05
2	001	0,15	26	165,00	0,08	2,07	7,96
	002	0,25	24	117,00	0,08	2,31	9,61
	004	0,4	22	61,70	0,08	2,59	13,28
	006	0,6	20	34,10	0,1	3,14	20,96
	010	1	18	21,70	0,1	3,65	29,71
	012	1,2	16	14,90	0,12	4,31	41,29
	020	2	14	11,20	0,12	4,93	53,08
3	001	0,15	26	165,00	0,08	2,20	10,75
	002	0,25	24	117,00	0,08	2,45	13,17
	004	0,4	22	61,70	0,08	2,76	18,36
	006	0,6	20	34,10	0,1	3,35	29,27
	010	1	18	21,70	0,1	3,89	42,02
	012	1,2	16	14,90	0,12	4,60	58,47
	020	2	14	11,20	0,15	5,33	78,63
4	001	0,15	26	165,00	0,08	2,41	13,54
	002	0,25	24	117,00	0,08	2,70	16,67
	004	0,4	22	61,70	0,1	3,08	24,55
	006	0,6	20	34,10	0,1	3,70	37,59
	010	1	18	21,70	0,12	4,35	55,87
	012	1,2	16	14,90	0,12	5,10	75,54

^a AWG = Closest American Wire Gauge.

4.3 Colour coding of cores and jacket

See EN 2713-002.

5 Required characteristics

According to EN 2235 and EN 3475-100.

See Table 2.

Table 2 (1 of 2)

EN 3475-	Designation of the test	Details
201	Visual examination	Applicable, laser marked sample to be tested.
202	Mass	Applicable, see Table 1.
203	Dimensions	Applicable, see Table 1.
301	Ohmic resistance per unit length	Applicable, see Table 1.
302	Voltage proof test	Applicable
303	Insulation resistance	Applicable
304	Surface resistance	Applicable
305	Overload resistance	Not applicable
306	Continuity of conductors	Applicable
401	Accelerated ageing	Applicable Temperature (250 ± 5) °C Laser marked sample to be tested.
402	Shrinkage and delamination	Applicable Temperature (250 ± 5) °C Maximum shrinkage at each end of cable: — jacket 2 mm, — core insulation, see EN 2267-009.
403	Delamination and blocking	Applicable Temperature (250 ± 5) °C
404	Thermal shock	Applicable Temperature (250 ± 5) °C Maximum shrinkage at each end of cable: — jacket 2 mm, — core insulation, see EN 2267-009.
405	Bending at ambient temperature	Applicable
406	Cold bend test	Applicable
407	Flammability	Applicable Extinguishing time: 3 s max.
408	Fire resistance	Not applicable
409	Air-excluded ageing	Not applicable
410	Thermal endurance	Not applicable