SLOVENSKI STANDARD

SIST EN 4604-010:2018

01-november-2018

Nadomešča:

SIST EN 4604-010:2017

Aeronavtika - Kabli, električni, za prenos signala - 010. del: Kabli, koaksialni, lahki, 50 ohmov, 200 °C, tip KX (lahki WD) - Standard za proizvod

Aerospace series - Cable, electrical, for signal transmission - Part 010 : Cable, coaxial, light weight, 50 Ohms, 200 °C, type KX (light WD) - Product standard

Luft- und Raumfahrt - Elektrische Leitungen für Signalübertragungen - Teil 010: Koaxialkabel, Leichtbauweise, 50 Ohm, 200 °C, Typ KX (WD Leichtbauweise) - Produktnorm

Série aérospatiale - Câbles électriques pour transmission de signaux - Partie 010 : Câble, coaxial, allégé, 50 ohms, 200 °C, type KX (WD allégé) - Norme de produit

Ta slovenski standard je istoveten z: EN 4604-010:2018

ICS:

33.120.10	Koaksialni kabli. Valovodi	Coaxial cables. Waveguides
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

SIST EN 4604-010:2018 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 4604-010

August 2018

ICS 49.060

Supersedes EN 4604-010:2017

English Version

Aerospace series - Cable, electrical, for signal transmission - Part 010 : Cable, coaxial, light weight, 50 Ohms, 200 °C, type KX (light WD) - Product standard

Série aérospatiale - Câbles électriques pour transmission de signaux - Partie 010 : Câble, coaxial, allégé, 50 ohms, 200 °C, type KX (WD allégé) - Norme de produit

Luft- und Raumfahrt - Elektrische Leitungen für Signalübertragungen - Teil 010: Koaxialkabel, Leichtbauweise, 50 Ohm, 200 °C, Typ KX (WD Leichtbauweise) - Produktnorm

This European Standard was approved by CEN on 17 December 2017.

CEN 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 CEN-CENELEC Management Centre or to any CEN 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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 4604-010:2018 E

Contents

Page

European foreword

This document (EN 4604-010:2018) 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 February 2019, and conflicting national standards shall be withdrawn at the latest by February 2019.

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

This document supersedes EN 4604-010:2017.

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.

1 Scope

This European Standard specifies the required characteristics of a light weight coaxial cable, 50 Ω, type KX for use in aircraft electrical systems at operating temperature between – 55 °C and 200 °C and specially for high frequency up to 6 GHz. Nevertheless, if needed, – 65 °C is also acceptable as shown by rapid change of temperature test.

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.

EN 3475-100 (all parts), *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 100: General*

EN 4604-001, *Aerospace series — Cable, electrical, for signal transmission — Part 001: Technical specification*

EN 4604-002, *Aerospace series — Cable, electrical, for signal transmission — Part 002: General*

TR 6058, *Aerospace series — Cable code and identification list* 1)

IEC 60096-0-1: 2012+AMD1:2017 CSV, *Radio frequency cables — Part 0-1: Guidelines to the design of detail specifications — Coaxial cables* 2)

ASTM-B298-07, *Standard specification for silver-coated soft or annealed copper wire* 3)

ASTM-B298-12, *Standard specification for silver-coated soft or annealed copper wire* 3)

3 Terms and definitions

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

1) Published as ASD-STAN Technical Report at the date of publication of this European Standard. http://www.asd-stan.org/

2) Published by: IEC International Electrotechnical Commission http://www.iec.ch/

3) Published by: ASTM National (US) American Society for Testing and Materials. http://www.astm.org/

4 Required characteristics

4.1 Material, constructions, dimension and mass

4.1.1 Material

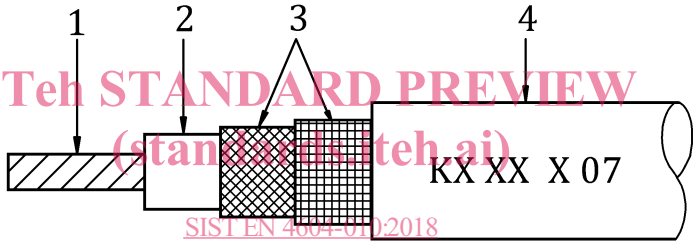
See Table 1.

Table 1 — Material

	Material	Finish	Colour
Conductor	Single-strands copper per ASTM-B298-07	1 µm silver plated	—
Dielectric	Fluorocarbon	—	—
Screen (foil)	Tape, silver plated copper or silver alloy	—	—
Shield	Braid, copper per ASTM-B298-12	1 µm silver plated	—
Jacket	Fluorocarbon	—	Light green

4.1.2 Construction, dimensions and mass

See Figure 1 and Table 2.



Key

1 Conductor
2 Dielectric
3 Screen + foil
4 Jacket

Figure 1 — Construction

Table 2 — Dimensions and mass

Diameter mm				Mass g/m	
Conductor	**Dielectric**	**Shield**	**Cable**	nom.	max.
1,4 ± 0,02	$4{,}2^{+\,0{,}1}_{-\,0{,}15}$	4,8 ± 0,2	5,4 ± 0,15	65	80

4.2 General characteristics

a) Operating temperature: – 55 °C to 200 °C;

b) Minimum bend radius:

1) in static use: 30 mm;

2) in dynamic use: 50 mm;

c) Performances are guaranteed up to 6 GHz.

4.3 Electrical characteristics

— Characteristic impedance: $Z_c = (50 \pm 2)\ \Omega$ at 200 MHz;

— Capacitance per unit length: $C_p = 88$ pF/m max.;

— Transfer impedance: see Table 4;

— Operating voltage: 1 000 V rms max.;

— Maximum power handling (at sea level): see Table 3;

— Attenuation versus frequency: see Table 3;

— Velocity of propagation ≥ 225 000 km/s.

Table 3 — Frequency, maximum attenuation, power handling and return loss

Frequency MHz	50	100	150	200	400	1 000	1 600	2 500	3 000	6 000
Attenuation dB/100 m	5,5	7,8	9,7	11	15,5	24,5	31,5	38,9	43,8	63,5
Power cw W	4 200	3 000	2 400	2 100	1 500	950	730	590	550	390
VSWR dB	1,1			1,15			1,2			1,35

Values of power have to be confirmed by measurement or calculation according to IEC 60096-0-1.

Table 4 — Frequency, transfer impedance

Frequency MHz	0 to 0,01	0,1	1	5	10	30	100
Transfer impedance Z_t max. (mΩ/m)	9,0	9,0	5,0	1,8	1,0	0,5	0,5

4.4 Tests

According to Table 5.

Table 5 — Tests *(1 of 4)*

EN 3475-	Designation of the test	Remarks
201	Visual examination	Applicable
202	Mass	Applicable See 4.1 and Table 2.
203	Dimensions	Applicable See 4.1 and Table 2.
301	Ohmic resistance per unit length	Applicable 11,53 Ω/km max.
302	Voltage proof test	Applicable Dielectric: Dry test: 2 500 V ac Jacket: Dry test: 1 750 V ac Dry impulse: 5 000 V Immersion test: 1 750 V ac
303	Insulation resistance	Applicable > 5 000 MΩ/km between shield and conductor
304	Surface resistance	Not applicable
305	Overload resistance	Not applicable
306	Continuity of conductors	Applicable
307	Corona extinction voltage	Applicable Extinction voltage = 1 500 V rms
401	Accelerated ageing	Not applicable
402	Shrinkage and delamination	Not applicable
403	Delamination and blocking	Not applicable
404	Thermal shock	Not applicable
405	Bending at ambient temperature	Not applicable
406	Cold bend test	Not applicable
407	Flammability	Applicable Load = 20 N Extinction time < 3 s
408	Fire resistance	Not applicable
409	Air-excluded ageing	Not applicable
410	Thermal endurance	Not applicable
411	Resistance to fluids	Applicable
412	Humidity resistance	Not applicable
413	Wrap back test	Not applicable
414	Differential scanning calorimeter (DSC test)	Not applicable