

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Composite string insulator units for overhead lines with a nominal voltage greater than 1 000 V –
Part 2: Dimensional and electrical characteristics**

**Isolateurs composites destinés aux lignes aériennes de tension nominale supérieure à 1 000 V –
Partie 2: Caractéristiques dimensionnelles et électriques**

<https://standards.iteh.ai/catalog/standards/iec/be335900-1a15-419e-8139-6223da66418b/iec-61466-2-1998>



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IEC 61466-2

Edition 1.2 2018-05
CONSOLIDATED VERSION

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.080.10; 29.240.20

ISBN 978-2-8322-5715-9

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VERSION REDLINE



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMPOSITE STRING INSULATOR UNITS FOR OVERHEAD LINES WITH A NOMINAL VOLTAGE GREATER THAN 1 000 V –

Part 2: Dimensional and electrical characteristics

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This consolidated version of the official IEC Standard and its amendments has been prepared for user convenience.

IEC 61466-2 edition 1.2 contains the first edition (1998-08) [documents 36B/179/FDIS and 36B/183/RVD], its amendment 1 (2002-01) [documents 36B/202/FDIS and 36B/204/RVD] and its amendment 2 (2018-05) [documents 36/427/FDIS and 36/429/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendments 1 and 2. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 61466-2 has been prepared by subcommittee 36B: Insulators for overhead lines, of IEC technical committee 36: Insulators.

Annex A is for information only.

The committee has decided that the contents of the base publication and its amendments 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

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INTRODUCTION to Amendment 2

Amendment 2 implements the introduction of UHV (ultra-high voltage) applications and the relevant characteristics of composite insulators.

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COMPOSITE STRING INSULATOR UNITS FOR OVERHEAD LINES WITH A NOMINAL VOLTAGE GREATER THAN 1 000 V –

Part 2: Dimensional and electrical characteristics

1 Scope

This part of IEC 61466 is applicable to composite string insulators units with a specified mechanical load (SML) of 40 kN ~~and 70 kN~~ to 600 kN for AC overhead ~~distribution~~ lines with a nominal voltage greater than 1 000 V and a frequency not greater than 100 Hz.

It also applies to insulators of similar design used in substations or ~~on electric traction lines~~ for railway applications.

This standard applies to string insulator units of composite type with ~~couplings~~ fittings in accordance with IEC 61466-1.

This standard ~~prescribes specified~~ specifies values for electrical and dimensional characteristics ~~of for composite string insulators units~~ for overhead ~~distribution~~ lines with a ~~highest~~ minimum lightning impulse withstand voltage (BIL) ~~level of 325 kV~~ up to 3 100 kV and a specified mechanical load (SML) of 40 kN ~~and 70 kN~~ to 600 kN.

NOTE General definitions and methods of testing are given in IEC 61109.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61466. At the time of publication, the editions indicated were valid. All normative documents are subjected to revision, and parties to agreements based on this part of IEC 61466 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60071-1:1993, *Insulation co-ordination – Part 1: Definitions, principles and rules*

IEC 60071-2:1976, *Insulation co-ordination – Part 2: Application guide*

IEC TS 60815-3, *Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 3: Polymer insulators for a.c. systems*

IEC 61109:1992, *Composite insulators for a.c. overhead lines with a nominal voltage greater than 1 000 V – Definitions, test methods and acceptance criteria*

IEC 61466-1:1997, *Composite string insulator units for overhead lines with a nominal voltage greater than 1 000 V – Part 1: Standard strength classes and end fittings*

3 Mechanical and dimensional characteristics

Composite string insulator units are standardized by the following mechanical and dimensional characteristics:

- specified mechanical load (SML)
 - type of couplings
- } which are dealt with in IEC 61466-1
- minimum creepage distance
 - minimum arcing distance
 - maximum diameter of insulating part
- } for which values are given in table 1

Table 1 gives a minimum creepage distance for each insulator along with the highest voltage for equipment based on a specific creepage distance of 16 mm/kV (phase/phase). This voltage is given for information only. Other values of specific creepage distance may be required. Further information on composite insulator creepage distances can be found in annex A.

4 Electrical characteristics

Composite string insulator units are standardized by the standard lightning impulse withstand voltage, for which values are given in table 1.

The wet power frequency withstand voltage shall be that given in IEC 60071-1, unless otherwise stipulated by national regulations or practice.

NOTE – General definitions, principles, rules and application guidelines for insulation co-ordination are given in IEC 60071-1 and IEC 60071-2.

5 Designation

Composite insulators are designated in table 1 as follows:

- by the letters CS followed by a number indicating the specified mechanical load (SML) in kilonewtons (kN);
- the letters X and Z, representing the couplings in accordance with IEC 61466-1;
- the two numbers separated by a solidus indicate the standard lightning impulse withstand voltage and the minimum creepage distance.

6 Marking

The insulator shall be marked in accordance with IEC 61466-1.

7 Tolerances

The dimensions given in table 1 are the absolute minima or maxima; hence no tolerances are applicable. The dimensions and tolerances of insulators supplied in compliance with this standard shall be shown on the manufacturer's drawing.

8 Field control and arc protection devices

For higher system voltages field control devices may be necessary. When such devices are fitted on the insulators, the arcing distance in Table 1 shall be determined considering their presence. If separate arc protection devices are used, the required additional striking distance can be extrapolated.

Table 1 – Designation and characteristics of composite insulators

Designation ¹⁾	Possible-specified-mechanical-loads-(SML)	Standard-lightning-impulse-withstand-voltage ²⁾	Minimum-creepage-distance-	Minimum-arcing-distance	Maximum-diameter-of-insulating-part	Highest-voltage-for-equipment-based-on-16-mm/kV-specific-creepage-distance ³⁾
	kN	kV	mm	mm	mm	kV
GMS(SML)XZ-60/195	40/70	60	195	100	200	12
GMS(SML)XZ-75/195	40/70	75	195	125	200	12
GMS(SML)XZ-75/280	40/70	75	280	125	200	17,5
GMS(SML)XZ-95/195	40/70	95	195	160	200	12
GMS(SML)XZ-95/280	40/70	95	280	160	200	17,5
GMS(SML)XZ-95/385	40/70	95	385	160	200	24
GMS(SML)XZ-125/385	40/70	125	385	210	200	24
GMS(SML)XZ-145/385	40/70	145	385	240	200	24
GMS(SML)XZ-145/580	40/70	145	580	240	200	36
GMS(SML)XZ-170/580	70	170	580	285	200	36
GMS(SML)XZ-250/835	70	250	835	440	200	52
GMS(SML)XZ-325/1160	70	325	1160	580	200	72,5

NOTE 1 – SML is the chosen specified mechanical failing load. XZ is the coupling code in accordance with IEC 61466-1.

NOTE 2 – The withstand voltages and insulating distances are given for insulators alone and do not take into account arcing or corona control devices which may be mounted on the insulators.

NOTE 3 – This column is given for information only. For supplementary information on creepage distance, see annex A.

Designation ^a	Specified mechanical loads (SML) (typical values in white area)						Standard lightning impulse withstand voltage ^b	Minimum creepage distance ^d	Minimum dry arcing distance ^c	Highest voltage for equipment based on 27,8 mm/kV unified specific creepage distance ^d
	kN									
CS(SML)(XZ)-60-195	40	70	100	120	160	210	60	195	100	12
CS(SML)(XZ)-75-195	40	70	100	120	160	210	75	195	125	12
CS(SML)(XZ)-75-280	40	70	100	120	160	210	75	280	125	17,5
CS(SML)(XZ)-95-195	40	70	100	120	160	210	95	195	160	12
CS(SML)(XZ)-95-280	40	70	100	120	160	210	95	280	160	17,5