



# SLOVENSKI STANDARD

## SIST EN 61869-5:2012

01-januar-2012

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### Instrumentni transformatorji - 5. del: Posebne zahteve za kapacitivne napetostne transformatorje

Instrument transformers - Part 5: Specific requirements for capacitive voltage transformers

Messwandler - Teil 5: Zusätzliche Anforderungen für kapazitive Spannungswandler

Transformateurs de mesure - Partie 5: Exigences additionnelles pour transformateurs capacitifs de tension

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[SIST EN 61869-5:2012](https://standards.iten.si/catalog/standards/sist/61869-5/2012)

Ta slovenski standard je istoveten z: [EN 61869-5:2011](https://standards.iten.si/catalog/standards/sist/61869-5/2012)  
[afbf092f8f7/sist-en-61869-5-2012](https://standards.iten.si/catalog/standards/sist/61869-5/2012)

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#### **ICS:**

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
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**SIST EN 61869-5:2012**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61869-5**

October 2011

ICS 17.220.20

Supersedes EN 60044-5:2004

English version

**Instrument transformers -  
Part 5: Additional requirements for capacitor voltage transformers  
(IEC 61869-5:2011)**

Transformateurs de mesure -  
Partie 5: Exigences supplémentaires  
concernant les transformateurs  
condensateurs de tension  
(CEI 61869-5:2011)

Messwandler -  
Teil 5: Zusätzliche Anforderungen für  
kapazitive Spannungswandler  
(IEC 61869-5:2011)

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This European Standard was approved by CENELEC on 2011-08-17. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 38/411/FDIS, future edition 1 of IEC 61869-5, prepared by IEC/TC 38, "Instrument transformers", was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61869-5:2011.

The following dates are fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-05-17
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2014-08-17

This European Standard supersedes EN 60044-5:2004 regarding capacitor voltage transformers.

EN 61869-5:2011 shall be read in conjunction with, and is based on, EN 61869-1:2009, Instrument transformers - General Requirements.

This Part 5 follows the structure of EN 61869-1 and supplements or modifies its corresponding clauses.

When a particular clause/subclause of Part 1 is not mentioned in this Part 5, that clause/subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 shall be adapted accordingly.

For additional clauses, subclauses, figures, tables, annexes or notes, the following numbering system is used:

- clauses, subclauses, tables, figures and notes that are numbered starting from 501 are additional to those in Part 1; [SIST EN 61869-5:2012](https://standards.iteh.ai/catalog/standards/sist/8288dd29-ec98-4c62-b1bd-5a509c3f7/sist-en-61869-5-2012)
- additional annexes are lettered 5A, 5B, etc. <https://standards.iteh.ai/catalog/standards/sist/8288dd29-ec98-4c62-b1bd-5a509c3f7/sist-en-61869-5-2012>

Annex ZZ of EN 61869-1 is not applicable for this part of the series.

An overview of the planned set of standards at the date of publication of this document is given below. The updated list of standards prepared by IEC TC38 is available at the website: [www.iec.ch](http://www.iec.ch).

The updated list of standards prepared by IEC TC38 and approved by CENELEC is available at the website: [www.cenelec.eu](http://www.cenelec.eu).

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

PRODUCT FAMILY STANDARDS	PRODUCT STANDARD	PRODUCTS	OLD STANDARD	
<b>61869-1</b> GENERAL REQUIREMENTS FOR INSTRUMENT TRANSFORMERS	<b>61869-2</b>	ADDITIONAL REQUIREMENTS FOR CURRENT TRANSFORMERS	60044-1	
	<b>61869-3</b>	ADDITIONAL REQUIREMENTS FOR INDUCTIVE VOLTAGE TRANSFORMERS	60044-2	
	<b>61869-4</b>	ADDITIONAL REQUIREMENTS FOR COMBINED TRANSFORMERS	60044-3	
	<b>61869-5</b>	ADDITIONAL REQUIREMENTS FOR CAPACITIVE VOLTAGE TRANSFORMERS	60044-5	
	<b>61869-6</b> ADDITIONAL GENERAL REQUIREMENT FOR ELECTRONIC INSTRUMENT TRANSFORMERS AND LOW POWER STAND ALONE SENSORS	<b>61869-7</b>	ADDITIONAL REQUIREMENTS FOR ELECTRONIC VOLTAGE TRANSFORMERS	60044-7
		<b>61869-8</b>	ADDITIONAL REQUIREMENTS FOR ELECTRONIC CURRENT TRANSFORMERS	60044-8
		<b>61869-9</b>	DIGITAL INTERFACE FOR INSTRUMENT TRANSFORMERS	
		<b>61869-10</b>	ADDITIONAL REQUIREMENTS FOR LOW-POWER STAND-ALONE CURRENT SENSORS	
		<b>61869-11</b>	ADDITIONAL REQUIREMENTS FOR LOW POWER STAND ALONE VOLTAGE SENSOR	60044-7
		<b>61869-12</b>	ADDITIONAL REQUIREMENTS FOR COMBINED ELECTRONIC INSTRUMENT TRANSFORMER OR COMBINED STAND ALONE SENSORS	
		<b>61869-13</b>	STAND ALONE MERGING UNIT	

### Endorsement notice

The text of the International Standard IEC 61869-5:2011 was approved by CENELEC as a European Standard without any modification.

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

IEC 60422

NOTE Harmonized as EN 60422.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

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

*Annex ZA of EN 61869-1:2009 applies with the following additions:*

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60038 (mod)	2009	IEC standard voltages	EN 60038	2011
IEC 60050-436	-	International Electrotechnical Vocabulary (IEV) - Chapter 436: Power capacitors	-	-
IEC 60050-601	-	International Electrotechnical Vocabulary (IEV) - Chapter 601: Generation, transmission and distribution of electricity - General	-	-
IEC 60050-604	-	International Electrotechnical Vocabulary (IEV) - Chapter 604: Generation, transmission and distribution of electricity - Operation	-	-
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	-
IEC 60358	-	Coupling capacitors and capacitor dividers	HD 597 S1	-
IEC 60481	-	Coupling devices for power line carrier systems	-	-
IEC 61869-1 (mod)	2007	Instrument transformers - Part 1: General requirements	EN 61869-1	2009



IEC 61869-5

Edition 1.0 2011-07

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Instrument transformers –**  
**Part 5: Additional requirements for capacitor voltage transformers**

**Transformateurs de mesure –**  
**Partie 5: Exigences supplémentaires concernant les transformateurs**  
**condensateurs de tension**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

**XA**

ICS 17.220.20

ISBN 978-2-88912-543-2

## CONTENTS

FOREWORD.....	5
1 Scope.....	8
2 Normative references .....	8
3 Terms and Definitions.....	8
3.1 General definitions .....	9
3.2 Definitions related to dielectric ratings and voltages.....	14
3.4 Definitions related to accuracy.....	14
3.5 Definitions related to other ratings .....	14
3.7 Index of abbreviations.....	15
5 Ratings.....	15
5.3 Rated insulation levels .....	16
5.3.3 Other requirements for primary terminals insulation .....	16
5.3.5 Insulation requirements for secondary terminals.....	17
5.3.501 Electromagnetic unit insulation requirements.....	17
5.4 Rated frequency.....	17
5.5 Rated output.....	17
5.5.501 Rated output values.....	17
5.5.502 Rated thermal limiting output.....	18
5.5.503 Rated output values for residual voltage windings .....	18
5.5.504 Rated thermal limiting output for residual voltage windings .....	18
5.6 Rated accuracy class.....	18
5.6.501 Accuracy requirements for measuring capacitor voltage transformer.....	18
5.6.502 Accuracy requirements for protective capacitor voltage transformers .....	19
5.501 Standard values of rated voltages .....	20
5.501.1 Rated primary voltages $U_{Pr}$ .....	20
5.501.2 Rated secondary voltages .....	20
5.501.3 Rated voltages for secondary winding intended to produce a residual voltage .....	21
5.501.4 Standard values of rated voltage factor.....	21
6 Design and construction .....	22
6.1 Requirements for liquids used in equipment.....	22
6.1.4 Liquid tightness.....	22
6.7 Mechanical requirements.....	22
6.8 Multiple chopped impulse on primary terminals.....	22
6.9 Internal arc fault protection requirements .....	22
6.13 Markings.....	22
6.13.501 Terminal markings .....	22
6.13.502 Rating plate markings.....	23
6.501 Short circuit withstand capability.....	27
6.502 Ferro-resonance.....	27
6.502.1 General .....	27
6.502.2 Transients of ferro-resonance oscillations.....	27
6.503 Transient response .....	28
6.503.1 General .....	28
6.503.2 Requirements for transient response .....	28
6.503.3 Standard transient response classes .....	28



6.504	Requirements for carrier – frequency accessories .....	29
6.504.1	General .....	29
6.504.2	Drain coil .....	29
6.504.3	Voltage limitation device .....	29
7	Tests .....	30
7.1	General .....	30
7.1.2	List of tests .....	30
7.1.3	Sequence of tests .....	31
7.2	Type tests .....	33
7.2.2	Temperature-rise test .....	33
7.2.3	Impulse voltage withstand test on primary terminals .....	34
7.2.4	Wet test for outdoor type transformers .....	35
7.2.6	Test for accuracy .....	35
7.2.8	Enclosure tightness test at ambient temperature .....	37
7.2.501	Capacitance and $\tan\delta$ measurement at power-frequency .....	37
7.2.502	Short-circuit withstand capability test .....	38
7.2.503	Ferro-resonance tests .....	39
7.2.504	Transient response test .....	39
7.2.505	Type test for carrier frequency accessories .....	41
7.3	Routine tests .....	42
7.3.1	Power-frequency voltage withstand tests on primary terminals .....	42
7.3.2	Partial discharge measurement .....	44
7.3.5	Test for accuracy .....	44
7.3.7	Enclosure tightness test at ambient temperature .....	46
7.3.8	Pressure test for the enclosure .....	46
7.3.501	Ferro-resonance check .....	46
7.3.502	Routine tests for carrier frequency accessories .....	46
7.4	Special tests .....	47
7.4.1	Chopped impulse voltage withstand test on primary terminals .....	47
7.4.2	Multiple chopped impulse test on primary terminals .....	47
7.4.3	Measurement of capacitance and dielectric dissipation factor .....	47
7.4.6	Internal arc fault test .....	47
7.4.501	Determination of the temperature coefficient (TC) .....	47
7.4.502	Tightness design test of capacitor units .....	47
Annex 5A (normative)	Typical diagrammeme of a capacitor voltage transformer .....	49
Annex 5B (informative)	Transient response of capacitor voltage transformer under fault conditions .....	50
Annex 5C (normative)	High-frequency characteristics of capacitor voltage transformers .....	51
Bibliography	.....	52
Figure 501	– Error diagram of a capacitor voltage transformer for accuracy classes 0,2, 0,5 and 1,0 .....	19
Figure 502	– Capacitor voltage transformer with a single secondary .....	23
Figure 503	– Capacitor voltage transformer with two secondaries .....	23
Figure 504	– Capacitor voltage transformer with two tapped secondaries .....	23
Figure 505	– Capacitor voltage transformer with one residual voltage winding and a single secondary .....	23

Figure 506 – Example of a typical rating plate.....	26
Figure 507 – Transient response of a capacitor voltage transformer .....	28
Figure 508 – Flow charts test sequence to be applied when performing type test (Figure 508a) and routine test (Figure 508b).....	32
Figure 509 – Diagram of a capacitor voltage transformer for the transient response test using equivalent circuit method.....	40
Figure 510 – Series burden.....	41
Figure 511 – Pure resistance .....	41
Figure 512 – Example of an error diagramme of class 1 CVT for accuracy check with the equivalent circuit.....	45
Figure 5A.1 – Example of a diagram for a capacitor voltage transformer.....	49
Figure 5A.2 – Example of a diagram for a capacitor voltage transformer with carrier- frequency accessories .....	49
Table 501 – Limits of voltage error and phase displacement for measuring capacitor voltage transformers .....	19
Table 502 – Limits of voltage error and phase displacement for protective capacitor voltage transformers .....	20
Table 503 – Rated secondary voltages for capacitor voltage transformers to produce a residual voltage .....	21
Table 504 – Standard values of rated voltage factors for accuracy and thermal requirements.....	21
Table 505 – Marking of the rating plate .....	23
Table 506a – Ferro-resonance requirements.....	27
Table 506b – Ferro-resonance requirements.....	28
Table 507 – Standard transient response values and classes .....	29
Table 10 – List of tests .....	31
Table 508 – Test voltage for temperature rise test .....	34
Table 509– Burden ranges for accuracy tests .....	36
Table 510 – Test voltages for units, stacks and complete capacitor voltage divider.....	43
Table 511 – Accuracy check points (example) .....	45
Table 512 – Ferro resonance check .....	46

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## INSTRUMENT TRANSFORMERS –

## Part 5: Additional requirements for capacitor voltage transformers

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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This International Standard IEC 61869-5 specific clauses for capacitor voltage transformers has been prepared by IEC technical committee 38: Instrument transformers.

This standard replaces IEC 60044-5 regarding capacitor voltage transformers as well as IEC-PAS 60044-5 for capacitor voltage transformers.

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

FDIS	Report on voting
38/411/FDIS	38/414/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.

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

This standard is Part 5 of IEC 61869, published under the general title *Instrument transformers*.

This part 5 is to be read in conjunction with, and is based on, IEC 61869-1, *General Requirements* – first edition (2007) – however the reader is encouraged to use its most recent edition.

This Part 5 follows the structure of IEC 61869-1 and supplements or modifies its corresponding clauses.

When a particular clause/subclause of Part 1 is not mentioned in this Part 5, that clause/subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

For additional clauses, subclauses, figures, tables, annexes or note, the following numbering system is used:

- clauses, subclauses, tables and figures and notes that are numbered starting from 501 are additional to those in Part 1;
- additional annexes are lettered 5A, 5B, etc.

An overview of the planned set of standards at the date of publication of this document is given below. The updated list of standards issued by IEC TC38 is available at the website: [www.iec.ch](http://www.iec.ch).

PRODUCT FAMILY STANDARDS		PRODUCT STANDARD	PRODUCTS	OLD STANDARD
<b>61869-1</b> GENERAL REQUIREMENTS FOR INSTRUMENT TRANSFORMERS		<b>61869-2</b>	ADDITIONAL REQUIREMENTS FOR CURRENT TRANSFORMERS	60044-1 60044-6
		<b>61869-3</b>	ADDITIONAL REQUIREMENTS FOR INDUCTIVE VOLTAGE TRANSFORMERS	60044-2
		<b>61869-4</b>	ADDITIONAL REQUIREMENTS FOR COMBINED TRANSFORMERS	60044-3
		<b>61869-5</b>	ADDITIONAL REQUIREMENTS FOR CAPACITIVE VOLTAGE TRANSFORMERS	60044-5
	<b>61869-6</b> ADDITIONAL GENERAL REQUIREMENT FOR ELECTRONIC INSTRUMENT TRANSFORMERS AND LOW POWER STAND ALONE SENSORS	<b>61869-7</b>	ADDITIONAL REQUIREMENTS FOR ELECTRONIC VOLTAGE TRANSFORMERS	60044-7
		<b>61869-8</b>	ADDITIONAL REQUIREMENTS FOR ELECTRONIC CURRENT TRANSFORMERS	60044-8
		<b>61869-9</b>	DIGITAL INTERFACE FOR INSTRUMENT TRANSFORMERS	
		<b>61869-10</b>	ADDITIONAL REQUIREMENTS FOR LOW-POWER STAND ALONE CURRENT SENSORS	
		<b>61869-11</b>	ADDITIONAL REQUIREMENTS FOR LOW-POWER STAND ALONE VOLTAGE SENSOR	60044-7
		<b>61869-12</b>	ADDITIONAL REQUIREMENTS FOR COMBINED ELECTRONIC INSTRUMENT TRANSFORMER OR COMBINED STAND ALONE SENSORS	
		<b>61869-13</b>	STAND ALONE MERGING UNIT	

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.

## INSTRUMENT TRANSFORMERS –

### Part 5: Additional requirements for capacitor voltage transformers

#### 1 Scope

This part of IEC 61869 applies to new single-phase capacitor voltage transformers connected between line and ground for system voltages  $U_m \geq 72,5$  kV at power frequencies from 15 Hz to 100 Hz. They are intended to supply a low voltage for measurement, control and protective functions.

The capacitor voltage transformer can be equipped with or without carrier-frequency accessories for power line carrier-frequency (PLC) application at carrier frequencies from 30 kHz to 500 kHz.

The base requirements for coupling capacitors and capacitors dividers are defined in IEC 60358. The transmission requirements for coupling devices for power line carrier (PLC) system are defined in IEC 60481.

The measurement application includes both indication measuring and revenue measuring.

NOTE 501 Diagrams of capacitor voltage transformer to which this standard applies are given in Figures 5A.1 and 5A.2.

#### 2 Normative references

[SIST EN 61869-5:2012](https://standards.iteh.ai/catalog/standards/sist/8288dd29-ec98-4c62-b1bd-af80928f7/sist-en-61869-5-2012)

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[af80928f7/sist-en-61869-5-2012](https://standards.iteh.ai/catalog/standards/sist/8288dd29-ec98-4c62-b1bd-af80928f7/sist-en-61869-5-2012)

Clause 2 of IEC 61869-1:2007 is applicable with the following additions:

IEC 61869-1:2007, *Instrument transformers – Part 1: General requirements*

IEC 60038 ed7.0 (2009-06) – *IEC standard voltages*

IEC 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60050-436, *International Electrotechnical Vocabulary (IEV) – Chapter 436: Power capacitors*

IEC 60050-601, *International Electrotechnical Vocabulary (IEV) – Chapter 601: Generation, transmission and distribution of electricity – General*

IEC 60050-604, *International Electrotechnical Vocabulary (IEV) – Chapter 604: Generation, transmission and distribution of electricity – Operation*

IEC 60358, *Coupling capacitors and capacitor dividers*

IEC 60481, *Coupling devices for power line carrier systems*

#### 3 Terms and Definitions

For the purpose of this document, the terms and definitions of IEC 61869-1 apply with the following additions:

### 3.1 General definitions

#### 3.1.501

##### **capacitor voltage transformer**

##### **CVT**

voltage transformer comprising a capacitor divider unit and an electromagnetic unit so designed and interconnected that the secondary voltage of the electromagnetic unit is substantially proportional to the primary voltage, and differs in phase from it by an angle which is approximately zero for an appropriate direction of the connections.

[IEC 60050-321:1986, 321-03-14, modified]

#### 3.1.502

##### **measuring voltage transformer**

voltage transformer intended to transmit an information signal to measuring instruments, integrating meters and similar apparatus

[IEC 60050-321:1986 , 321-03-04 modified]

#### 3.1.503

##### **protective voltage transformer**

voltage transformer intended to transmit an information signal to electrical protective and control devices

[IEC 60050-321:1986 , 321-03-05]

#### 3.1.504

##### **secondary winding**

winding which supplies the voltage circuits of measuring instruments, meters, protective or control devices

[IEC 60050-321:1986, 321-01-07 modified]

#### 3.1.505

##### **residual voltage winding**

winding of a single-phase capacitor voltage transformer intended, in a set of three single-phase transformers, for connection in broken delta for the purpose of producing a residual voltage under earth-fault conditions.

[IEC 60050-321:1986, 321-03-11]

#### 3.1.506

##### **rated temperature category of a capacitor voltage transformer**

range of temperature of the ambient air or of the cooling medium for which the capacitor voltage transformer has been designed

#### 3.1.507

##### **line terminal**

terminal intended for connection to a line conductor of a network

[IEC 60050-436:1986, 436-03-01]

#### 3.1.508

##### **ferro-resonance**

sustained resonance of a circuit consisting of a capacitance with a non-linear saturable magnetic inductance and a voltage ac-source for excitation

NOTE 501 The ferro-resonance can be initiated by switching operations on the primary side or secondary side.

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