



**SLOVENSKI STANDARD**  
**SIST EN 116205/116206/116207:2001**  
**01-september-2001**

---

**Blank Detail Specification: Hermetically sealed relays - For severe static environmental conditions (116205) - For severe mobile environmental conditions (116206) - For severe airborne environmental conditions (116207)**

Blank Detail Specification: Hermetically sealed relays - For severe static environmental conditions (116205) - For severe mobile environmental conditions (116206) - For severe airborne environmental conditions (116207)

**iTeh STANDARD PREVIEW**

Vordruck für Bauartspezifikation: Hermetisch dichte Relais - Für stationäres Gerät für erschwerte Umweltbedingungen (116205) - Für bewegliches Gerät für erschwerte Umweltbedingungen (116206) - Für fliegendes Gerät für erschwerte Umweltbedingungen (116207)

[SIST EN 116205/116206/116207:2001](https://standards.itih.ai/catalog/standards/sist/f5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001)

<https://standards.itih.ai/catalog/standards/sist/f5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001>

Spécification particulière cadre: Relais hermétiques - Pour environnement sévère sur équipement fixe (116205) - Pour environnement sévère sur équipement mobile (116206) - Pour environnement sévère sur équipement aéronautique (116207)

**Ta slovenski standard je istoveten z: EN 116205-206-207:1995**

---

**ICS:**

29.120.70      Releji      Relays

**SIST EN 116205/116206/116207:2001      en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 116205/116206/116207:2001

<https://standards.iteh.ai/catalog/standards/sist/f5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001>

EUROPEAN STANDARD

EN 116205/116206/116207

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 1995

Supersedes EN 116205/116206/116207:1992

Descriptors: Quality, electronic components, relays

English version

**Blank Detail Specification: Hermetically sealed relays**

For severe static environmental conditions (116205)

For severe mobile environmental conditions (116206)

For severe airborne environmental conditions (116207)

Spécification particulière cadre: Relais  
hermétiquesPour environnement sévère sur équipement fixe  
(116205)Pour environnement sévère sur équipement  
mobile (116206)Pour environnement sévère sur équipement  
aéronautique (116207)Vordruck für Bauartspezifikation:  
Hermetisch dichte RelaisFür stationäres Gerät für erschwerte  
Umweltbedingungen (116205)Für bewegliches Gerät für erschwerte  
Umweltbedingungen (116206)Für fliegendes Gerät für erschwerte  
Umweltbedingungen (116207)

(standards.iteh.ai)

[SIST EN 116205/116206/116207:2001](https://standards.iteh.ai/catalog/standards/sist/5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001)<https://standards.iteh.ai/catalog/standards/sist/5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001>

This European Standard was approved on 1994-10-28. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization

Comité Européen de Normalisation Electrotechnique

Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

## Foreword

This European Standard was prepared by CLC/TC CECC/WG 16.

The text of the draft based on document CECC(Secretariat)3563 was submitted to the formal vote; together with the voting report, circulated as document CECC(Secretariat)3627, it was approved as EN 116205/116206/116207 on 1994-10-28.

This European Standard supersedes EN 116205/116206/116207:1992.

The following dates were 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) 1995-09-06
- latest date by which national standards conflicting with the EN have to be withdrawn (dow) 1996-09-06

This standard combines three BDSs. Unless otherwise indicated, the content of this standard is applicable to all three BDSs. However, in the test schedules contained in table 5, a differentiation is made between test schedule 5 (EN 116205), test schedule 6 (EN 116206) and test schedule 7 (EN 116207) as indicated in the second column.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 116205/116206/116207:2001](https://standards.iteh.ai/catalog/standards/sist/5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001)

<https://standards.iteh.ai/catalog/standards/sist/5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001>

(1)	CECC 16 205 (206, 207)-XXX Issue: ... month, year Page 1 to ...	(2)
(3)	Electronic components of assessed quality in accordance with EN 116 000-1: 1992 EN 116 200: 1991 EN 116 205, 116 206 or 116 207 as applicable	(4)
Detail specification for all-or-nothing relays		(5)
Type(s): Construction:		(6)
Outline drawing	Application: Relays according to this standard are provided for the operation in military and/or commercial equipment and/or installations with increased mechanical and environmental requirements. The applicable load range is from low level to less than 5 Amperes. Test schedule: (Test schedule from sectional specification) The relays have a quality assessment level Y.  SIST EN 116205/116206/116207:2001 <a href="https://standards.iteh.ai/catalog/standards/sist/f5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001">https://standards.iteh.ai/catalog/standards/sist/f5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001</a>	(8)
Dimensions in mm		
Coil data:		(9)
Contact data:		(10)
Temperature range: Storage temperature: - 65 to + 150 °C Ambient temperature: - 65 to + 125 °C		(11)
Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00 200: Register of Approvals.		

**Key for page 3:**

The first page of the detail specification (DS) should have the layout recommended on page 3. The numbers between brackets on page 3 correspond to the following indications which should be given:

**Identification of the detail specification**

- (1) The name of the National Standards Organization under whose authority the detail specification is published and, if applicable, the organization from whom the DS is available.
- (2) The CECC symbol and the number allotted to the completed detail specification by the CECC General Secretariat.
- (3) The number and issue number of the CECC generic specification and/or sectional specification as relevant, also national reference if different.
- (4) If different from the CECC number, the national number of the detail specification, date of issue and any further information required by the national system, together with any amendment numbers.

**Identification of the relay**

- (5) Type: Monostable or bistable, polarized or not, number and arrangement of contacts, low level (or not) to high level, contact current and voltage, suppression device, protection against reverse polarity, coil protection.
- (6) Construction: Sizes (for example half-size crystal can)  
Terminals, mounting variants and other typical construction details.

For (5) and (6) the text to be given in the detail specification should be suitable for an entry in CECC 00 200 (Register of Approvals) and CECC 00 300 (Library List).

- (7) Basic outline drawing and implantation; the detailed variants for terminals and mountings shall be given in appendices, if necessary.
- (8) Application and test schedule:  
The test schedules contained in these combined BDSs include all requirements for EN 116 205, 116 206 and 116 207.  
Unless otherwise indicated, the content of these combined BDSs including the test schedules is applicable to EN 116 205, 116 206 and 116 207.  
Where shown in the second column of the test schedules in Table 5, individual test schedules 5, 6 or 7 are applicable as indicated to EN 116 205, 116 206 or 116 207 respectively.  
The test schedules have levels of assessment which render the qualified components suitable for the following applications:  
Test schedule 5 (EN 116 205) hermetically sealed relays for severe static environmental conditions.  
Test schedule 6 (EN 116 206) hermetically sealed relays for severe mobile environmental conditions.  
Test schedule 7 (EN 116 207) hermetically sealed relays for severe airborne environmental conditions.
- (9) Available coil voltages.
- (10) Available contact arrangements and contact current and voltage.
- (11) Temperature range.

**1. Related documents**

- CECC 00 802-2: 1994      Guidance Document: CECC standard method for the specification of surface mounting components (SMDs) of assessed quality
- EN 116 000-1: 1992      Generic Specification: Electromechanical all-or-nothing relays
- EN 116 200: 1991      Sectional Specification: Electromechanical all-or-nothing relays

(National authorized institutions should complete this section making reference to any additional documents or specifications directly referred to in their national equivalent of this document.)

**2. Characteristic values of the relay**

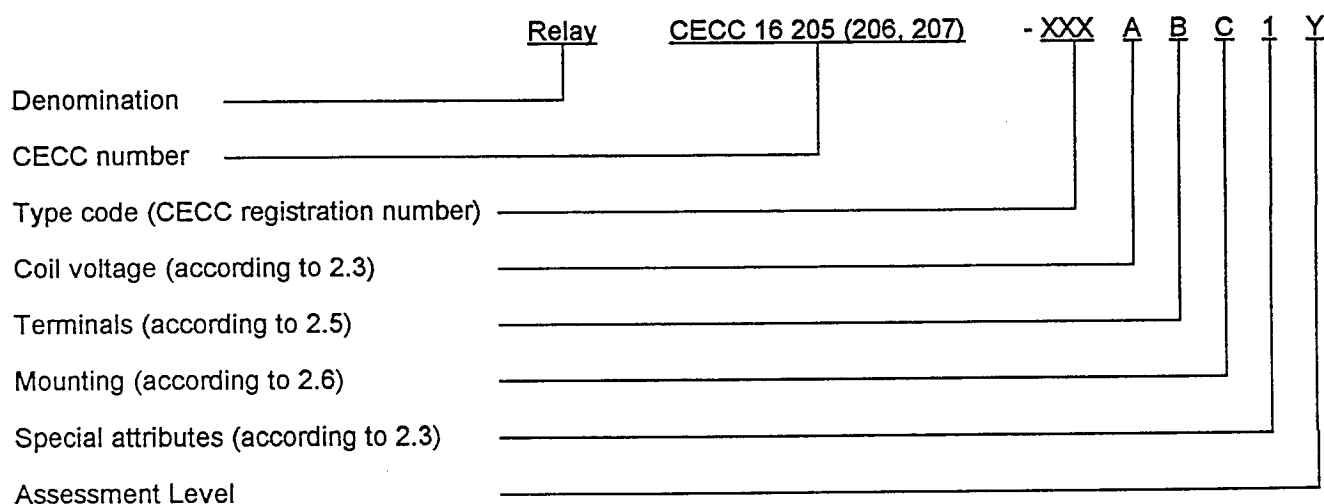
These shall be in accordance with IEC 255-1-00 as applicable.

**2.1 General data**

- Contact application: .....
- Contact arrangement: .....
- Mass (Weight): ..... g max.
- Finish of the relay housing: .....
- Finish of the terminals: .....
- Insulation resistance: 10 000 MΩ min. at 500 V d.c.
- Dielectric withstand voltage: .....V min.
- Nominal free volume: .....

Table 1: Dielectric test voltages

	at sea level V a.c. min.	at 2 kPa (26 600 m) V a.c. min.
Open contacts		
Between adjacent contacts		
Contacts to case		
Coil to contacts		
Coil to case		

**2.2 Construction of designation (ordering information)**

For electronic data processing the ordering data shall be written without blanks.

Note: The reference to monostable or bistable, polarized or not polarized, number and kind of contacts and general coil additives shall be given in the title of the specification.

### 2.3 Coil data

Table 2: Coil data

Identification letter of the coil	Voltage d.c./a.c.		Coil resistance and/or impedance $\Omega$ $\pm 10\%$ at 23°C	Operate voltage d.c./a.c.		Non-release voltage d.c./a.c.		Release voltage d.c./a.c.		Rated power/burden mW/mVA at 23°C	Special attributes, code number 1) 2)
	V			V max.		V		V			
	rated	max.		at 23°C	at 125°C	at 23°C	at 125°C	at 23°C	at -65°C		

1) Configuration of coil suppression or additional function if applicable.  
2) Screened semiconductors according to CECC 50 000 Level Y or JAN-TX or equivalent screened

Note: For uniformity of use the codes in Annex A are recommended to be followed.

### 2.4 Contact data

2.4.1 Contacts, number, configuration and application categories

2.4.2 Contact load, switching cycles and frequencies for endurance and overload tests (if required)

Table 3: Data for endurance and overload tests

Loads	at 28 V d.c.		at 115 V 400 Hz		Switching cycles	Switching frequency
Low level						
Resistive						
Inductive						
Lamp						*)
Motor						*)
Intermediate load						
Resistive overload						
Inductive overload						
Lamp overload						*)
Motor overload						*)

\*) Note: Lamp and motor loads are not subject to tests with specified frequencies. ON- and OFF-duty cycles see appropriate tests.

For inductive load the maximum inductance of the load shall be specified (value specified in mH).

For relays with contact application 0, the lower values for switching voltage and current shall be specified.

Maximum voltage drop per contact: ... mV d.c. or ... mV a.c.

Note: The following ratings are for information only, and not for inspection purposes.

Maximum contact voltage: ..... V d.c. or ..... V a.c.

Minimum contact voltage: ..... mV d.c. or ..... mV a.c.

Minimum contact current: .....  $\mu$ A d.c. or .....  $\mu$ A a.c.



### 2.4.3 Static contact resistance

.....m $\Omega$  max. initial resistance  
 .....m $\Omega$  max. after electrical life

Relays with long leads to be measured at a prescribed distance from the relay body.

### 2.4.4 Dynamic contact resistance

Voltage drop across closed contacts shall be 5 % max. of the open circuit test voltage.  
 (Value specified in m $\Omega$ , for relays with long leads the test point shall be specified according to 2.4.3)

### 2.4.5 Mechanical life

..... switching cycles

### 2.4.6 Timing (over the whole temperature range)

- Operate time max. .... ms
- Release time max. .... ms
- Release time max. .... ms (with suppression device)
- Bounce time max. .... ms (as applicable)
- Stabilization time max. .... ms (as applicable)

Note: Stabilization time is the sum of bounce time and the time to stabilize to static contact resistance.

## 2.5 Terminals and SMD requirements

### 2.5.1 Terminal variants and codes

Table 4.1: Variants of terminals and codes

Code	Terminal

SIST EN 116205/116206/116207:2001  
<https://standards.iteh.ai/catalog/standards/sist/f5d4a1ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001>

Terminals shall be fully specified in an annex.

Note: For uniformity of use the codes in Annex A are recommended to be followed.

### 2.5.2 Soldering process and resistance to soldering heat for SMD

For Test 19 (Solderability) and Test 41 (Resistance to soldering heat) of Table 5, the following test conditions are applied (see figures 3 and 4 of CECC 00 802):

Table 4.2: Soldering Classification

Soldering process	Class	Test	
		Conditions	Category
vapour phase infra-red double wave	A	260 °C/ 10 s and 215 °C/ 40 s	1 and 3

Table 4.3: Resistance to soldering heat: immersion conditions

Category	Immersion conditions		Simulated process
	°C	s	
1	260 ± 5	10 ± 1	double wave infra-red
3	215 ± 5	40 ± 1	vapour phase

## 2.6 Mounting and header

The mounting variants and the respective code letters for the relay shall be specified. Details and drawings shall be listed in an annex.

Table 4.4: Mounting variants and codes

Code	Mounting

Note: For uniformity of use the codes in Annex A are recommended to be followed.

## 2.7 Environmental data

The relays shall withstand at least the following environmental stresses:

- shock: 6 shocks, 735 m/s<sup>2</sup> (75 g) half sine acceleration, 6 ms duration
- bump: 4000 bumps, 392 m/s<sup>2</sup> (40 g) acceleration, 6 ms duration
- vibration (sinusoidal): amplitude 2,0 mm or acceleration 294 m/s<sup>2</sup> (30 g), 10 Hz to 3000 Hz
- vibration (random): 0,2 g<sup>2</sup>/Hz, 20 Hz to 2000 Hz
- acceleration (steady state): 98 m/s<sup>2</sup> (10 g), duration 5 minutes
- mechanical robustness of terminals:
  - Test Ua1 tensile ..... N
  - Test Ua2 thrust ..... N
  - Test Ub bending ..... N
  - Test Uc torsion ..... angle

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

Table 5 gives full details of the tests and acceptance criteria.

SIST EN 116205/116206/116207:2001  
<https://standards.iteh.ai/catalog/standards/sist/f5d4a2ba-6215-4ce0-8bc8-c833d485f604/sist-en-116205-116206-116207-2001>

## 3. Qualification approval

- as stated in CECC 00 114/II § 1.4 (1) "fixed sample"
- sampling and test schedule are specified in Table 6
- the tests specified and their order are mandatory.

#### 4. Quality conformance inspection

Quality conformance inspection contains the tests stated in Table 5

- Group A and B: tests for inspection lots acceptance
- Group C and D: periodic tests.

Unless otherwise stated (if applicable) in this blank detail specification, all tests of Table 5 are mandatory. Where a sub-group contains cumulative tests, the order of the tests is mandatory.

Specimens subjected to tests denoted as destructive (D) shall not be released for delivery.

##### 4.1 Formation of inspection lots

According to CECC 00 114/II § 3.1.

##### 4.2 Intervals between Group C and Group D tests

The tests of Groups C and D shall be performed in the intervals specified in Table 5.

##### 4.3 Delayed delivery

According to 4.9 of EN 116 000-1: 1992

Tests to be carried out (Test No. according to Table 5)

- Test No. 5 Static contact resistance
- Test No. 16 Sealing
- Test No. 19 Solderability

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

#### 5. Marking and documentation

The relay and the package supplied according to this detail specification shall be marked as follows:

[SIST EN 116205/116206/116207:2001](https://standards.iteh.ai/catalog/standards/sist/116205-116206-116207-2001)

##### 5.1 Marking of the relay

The marking shall be durable and easily legible, the following items shall be present:

- a) Manufacturer's name or trade mark
- b) CECC mark of conformity
- c) Date of manufacture, year/week coded according to IEC 62
- d) Wiring diagram
- e) CECC ordering information according to clause 2.2

##### 5.2 Marking of package

- a) Manufacturer's name or trade mark
- b) Indication of place and/or country of manufacturing (if required in the detail specification)
- c) CECC ordering information according to clause 2.2
- d) Date of manufacture, year/week coded according to IEC 62
- e) Quantity
- f) CECC mark of conformity

##### 5.3 Documentation

For each delivery shall be added a certificate of conformance according to CECC 00 108.