

**Bundesamt
für
Wehrtechnik
und
Beschaffung**

Harmonisiertes Gütebestätigungssystem für Bauelemente der Elektronik
Bauartspezifikation
Hermetisch dichte Relais für fliegendes Gerät
für erschwerte Umweltbedingungen
Relais 1/2 CC, Spule 5 bis 52 V DC, 2 Wechsler, 2 A
empfindlich, (CECC 16 207-004)

VG
95 302
Teil 304

Diese Bauartspezifikation ist vom CECC-
Generalsekretariat unter der Nummer
registriert.

CECC 16 207-004

1.Ausgabe

Harmonized system of quality assessment for electronic components; detail specification:
Hermetically sealed relays for severe airborne environmental conditions;
Relay 1/2 CC, coil 5 to 52 V d.c., 2 make and break contacts, 2 A, sensitive (CECC 16 207-004)

Diese Anwenderspezifikation des Bundesamtes für Wehrtechnik und Beschaffung (BWB) ist ausgerichtet
nach dem Vordruck für Bauartspezifikationen CECC 16 207 des CENELEC-Komitees für Bauelemente der
Elektronik (CECC) im "Europäischen Komitee für elektrotechnische Normung (CENELEC)".

Die grundlegenden Bestimmungen und die Verfahrensregeln für dieses harmonisierte Gütebestätigungs-
system sind in CECC 00 101 bis 00 106, 00 108, 00 109, 00 111 bis 00 114 festgelegt.

Das zuständige Arbeitsgremium für diese Spezifikation ist der NEA 671.1 "Relais" der Normenstelle
Elektrotechnik im DIN.

Zitierte Normen

- CECC 00 101 Harmonisiertes Gütebestätigungssystem für Bauelemente der Elektronik;
Das CENELEC-Komitee für Bauelemente der Elektronik (CECC)
- CECC 00 102 -; Organisation und Verwaltung
- CECC 00 103 -; Komitee für Gütesicherung von Bauelementen der Elektronik (ECQAC)
- CECC 00 104 -; CECC-Arbeitsgruppen
- CECC 00 105 -; CECC-Mitgliederverzeichnis
- CECC 00 106 -; Methoden zur Änderung der Verfahrensregeln des Systems
- CECC 00 108 -; Konformitäts-Bestätigung
- CECC 00 109 -; Bestätigte Prüfberichte
- CECC 00 111 -; Spezifikation
- CECC 00 112 -; Abstimmverfahren
- CECC 00 113 -; Nationale Erklärung über die Überwachungsmaßnahmen

Übrige Normen siehe Abschnitt 1

Fortsetzung 23 Seiten CECC-Spezifikation

Normenstelle Elektrotechnik (NE) im DIN Deutsches Institut für Normung e.V.

Deutsche Elektrotechnische Kommission im DIN und VDE (DKE), Stresemannallee 15, 6000 Frankfurt/Main 70

CECC 16 207-004

Issue: 1 February 1993
1 to 23



ELECTRONIC COMPONENTS OF ASSESSED QUALITY IN ACCORDANCE WITH:

CECC 16 000, issue 2 with amendment 1
CECC 16 200, issue 1 with amendment 1
CECC 16 207, issue 1

User specification of Bundesamt für Wehrtechnik und Beschaffung (BWB)
Holder of Specification:
Normenstelle Elektrotechnik (NE) im DIN
Deutsches Institut für Normung e.V.

Detail specification for All-or-nothing Relays

Type: 1/2 Size Crystal Can, monostable, 2 make and break contacts, 2 A

Construction: hermetically sealed, welded construction, hooked or straight terminals, sensitive

Application category of contacts: CA 0 10 mA max.

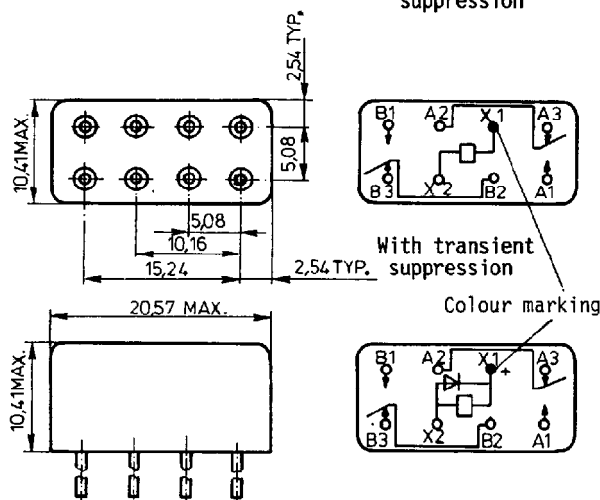
CA 1 0,1 A max. resistive

CA 2 1 A max. resistive

CA 3 2 A max. resistive

Outline drawing and wiring diagram
Dimensions in mm, tolerances $\pm 0,25$ mm
if not otherwise specified
Wiring diagram marked on top;
figures show terminal view.

Without transient suppression



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 2 Amperes.

Test schedule 7 of CECC 16 200

The relays have a quality assessment level Y.

Coil data: 5 V, 6 V, 12 V, 28 V, 32 V, or 36 V

Contact data: 2 make and break contacts
Low level: 10 mA max., 10 mV to 50 mV
High current: rated contact voltage 28 V d.c., 115 V a.c. 400 Hz
contact current 2 A d.c., 0,3 A a.c. resistive load

Temperature range: Storage temperature: - 65 to + 150 °C
Ambient temperature: - 65 to + 125 °C

Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00 200: Qualified Products List, the MUAHAG-PPL Volume 5 and VG 95 212 Part 10 (LZB).

1 Related documents

CECC 00 114 (Issue 1) Quality assessment procedures

CECC 00 200 (Issue 1) Harmonized System of Quality Assessment for Electronic Components; Qualified Products List

CECC 16 000 (Issue 2) -; generic specification; electromechanical all or nothing relays

CECC 16 200 (Issue 1) -; sectional specification; electromechanical all or nothing relays

CECC 16 207 (Issue 1) -; blank detail specification; hermetically sealed relays for severe airborne environmental conditions

IEC 62 Marking codes for resistors and capacitors

IEC 68 - 1 Environmental testing, Part 1: General and guidance

IEC 68 - 2 - 17 Basic environmental testing procedures; Part 2: Tests - Test Q: Sealing

IEC 68 - 2 - 20 -; Part 2: Tests - Test T: Soldering

IEC 68 - 2 - 47 -; Part 2: Tests - Mounting of components, equipment and other articles for dynamic tests including shock (Ea), bump (Eb), vibration (Fc and Fd) and steady-state acceleration (Ga) and guidance

IEC 410 Sampling plans and procedures for inspection by attributes

MUAHAG-PPL Volume 5 Cenelec Electronics Components Committee; Military Usage and Harmonisation Advisory Group; Preferred Products List; Relays

VG 95 212 part 10 Listen zugelassener Bauelemente (LZB); Hermetisch dichte Relais

2 Characteristic values of the relay

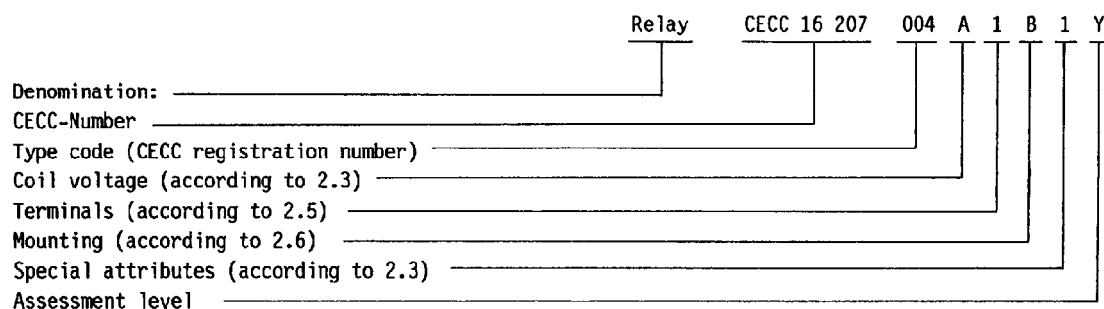
2.1 General data

- Thermal resistance : n.a.
- Application category of contact: 0, 1, 2 and 3
- Contact arrangement : 2 make and break contacts
- Mass (Weight) : 13 g max.
- Finish of the relay housing : anti-corrosion
- Finish of the terminals : tin plated or gold plated
- Insulation resistance : 10 000 M Ω min at 500 V d.c.
- Dielectric withstand voltage : according to table 1
- Free volume : 0,9 cm³ max.

Table 1 Dielectric test voltages

	at sea level V a.c. min.	at 2 kPa (26 600 m) V a.c. min.
Open contacts:	500	350
Between adjacent contacts:	1000	350
Contacts to case:	1000	350
Coil to contacts:	1000	350
Coil to case:	500	350

2.2 Construction of designation (ordering information):



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

2.3 Coil data (see table 2)

Table 2 Coil data

Identification letter of the coil	Voltage d.c. V		Coil resi- stance and/or impedance at 23°C Ω ± 10 %	Operate voltage d.c. V		Release voltage d.c. V				Rated power/ burden mW/mVA max.	Special attributes, code number 1)
	rated	max.		max. at 23°C	125°C	max. at		min. at			
						23°C	125°C	23°C	-65°C		
A	5	7	47	2,2	3,2	1,32	1,9	0,21	under prepa- ration	100	1
B	6	9	75	2,75	4,0	1,65	2,4	0,27		100	1
D	12	20	310	5,6	8,0	3,35	4,8	0,55		100	1
G	28 ²⁾	35	1030	11,4	16,5	6,9	10,0	1,10		125	1
H	32	44	1620	14,3	21,0	8,6	12,5	1,40		125	1
K	36	56	2640	18,0	26,0	10,9	15,8	1,80		125	1

1) Without suppression the code number is 0, with suppression the code number is 1.

2) Substitutes relay with rated voltage 26,5 V d.c.

2.4 Contact data

2.4.1 Contacts: 2 make and break contacts

Applicable categories of contact: CA 0, 1, 2 and 3

2.4.2 Load, switching cycles and frequencies for endurance and overload tests see table 3

Table 3 Data for endurance and overload tests

Load	at 28 V d.c.	at 115 V 400Hz	Switching cycles	Switching frequency
Low level	30 mV/ 10 mA max.	n.a.	1 000 000 ²⁾	10/s
Resistive	2 A	0,1 A	100 000	20/min.
Inductive 1)	0,1 A	n.a.	100 000	10/min.
Lamp	0,16 A	n.a.	100 000	10/min.
Motor	n.a.	n.a.	n.a.	n.a.
Intermediate load	0,1 A	n.a.	50 000	10/min.
Resistive overload	4 A	n.a.	100	10/min.
Inductive overload	1 A	n.a.	100	10/min.
Lamp overload	n.a.	n.a.	n.a.	n.a.
Motor overload	n.a.	n.a.	n.a.	n.a.

1) Inductivity 0,2 H max.

2) Low level: 100 000 cycles plus 900 000 cycles mechanical life

The following values are for information only and not for inspection purposes.

Maximum contact voltage: 30 V d.c. resp. 115 V 400 Hz a.c.

Minimum contact voltage: 30 mV d.c.

Minimum contact current: 0,03 mA d.c.

Maximum voltage drop per contact: 1,4 V d.c.

2.4.3 Static contact resistance:

max. 50 m Ω initial resistance (measured at 3 mm distance from the relay header)
max. 150 m Ω after electrical life

2.4.4 Dynamic contact voltage drop (for low level load)

Voltage drop 5 % max. of voltage over closed contacts

2.4.5 Mechanical life:

1 000 000 switching cycles

2.4.6 Timing (Over the whole temperature range):

- Operate time max. 6 ms
- Release time max. 5 ms
- Release time max. 10 ms (with suppression device)
- Bounce time max. 2 ms
- Stabilisation time max. 2,5 ms

Note: Stabilisation time is the sum of bounce time and the time to stabilize to 90 % of static contact resistance.

2.5 Terminals, variants and codes

Table 4.1

Code number	Terminals	Finish
1	Solder hooks	tinned
2	Pins	tinned
3	Pins	gold plated

For further informations see annex 2.

2.6 Mounting

Table 4.2

Code letter	Mounting variant
B	Ground flange, holes oval
D	Ground flange, twin holes
F	Side flange, holes oval
O	Without mounting hardware accessories

For further informations see annex 1

2.7 Environmental data

The relays shall withstand at least the following environmental stresses:

- shock: 981 m/s² (100 g) half sine acceleration, 6 ms duration.
- bump: 392 m/s² (40 g) acceleration, 6 ms duration.
- vibration (sinusoidal): amplitude 2,0 mm or 294 m/s², 10 Hz to 3000 Hz
- vibration (random): 0,2 g²/Hz, 20 Hz to 2000 Hz
- acceleration (constant): 98 m/s², duration 5 minutes
- mechanical robustness of terminals:
 - Test Ua1 tensile 13,34 N
 - Test Ub bending 2,50 N
 - Test Uc torsion 90° angle

3 Qualification approval

- as stated in CECC 00 114/II section 1.4 (1) "fixed sampling"
- 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 in this 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 section 3.1

4.2 Intervals between group C and group D tests

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

5 Marking and documentation

Relays and their package supplied according to this detail specification shall be marked as follows:

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 packaging

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

5.3 Documentation

For each delivery shall be added a certificate of conformance according to CECC 00 114.

6 Annexes

Annex 1 shows mounting variants, dimensions and codes according to table 4.2

Annex 2 shows terminal variants, dimensions and codes according to table 4.1

7 Tests

7.1 Standard conditions for testing:

If not otherwise stated all tests shall be performed according to 5.5 of CECC 16 000.

7.2 Mounting of test items during the test

The following indications shall apply for mechanical tests e.g. shock, vibration, acceleration, bump
The relay shall be mounted by its normal mounting methods to the test plate where inherent resonances have been minimized so as not to invalidate the test results; IEC 68-2-47 refers.

7.3 General conditions for testing

Unless otherwise stated, the tests shall be carried out under general test conditions according to IEC 68 part 1.

Unless otherwise stated, the rated coil voltage specified in table 2 shall be used for all tests.

8 Ordering information

See clause 2.2

Notes on Table 5

Note 1: Unless otherwise stated the sectional numbers of tests and performance requirements refer to CECC 16 000, Issue 2.

Note 2: Section number refers to this specification.

Note 3: Inspection Levels (IL) and Acceptable Quality Levels (AQL) are selected from IEC 410.

Note 4: P = periodicity (in months)
n = sample size
c = acceptance criterion (permitted number of defectives)

Note 5: More severe than CECC 16 207