PCB relay for DC voltage, neutral, monostable

Features

- Used as a switching element for electrical separation between low-power control circuits and power load circuits
- Clearance/creepage distances between winding and contact ≥ 4 mm (A/B version, make contact or changeover contact) or ≥ 8 mm (C/D version, make contact or break contact)
- Mechanical and electrical characteristics comply with the “Rules for electrical relays in power installations” (VDE 0435/9.72)
- Used for safe electrical insulation in the following applications
  - open and closed-loop control equipment for domestic use (VDE 0631)
  - electronic equipment for domestic use (VDE 0860)
- Suitable for fully automated processing

Typical applications

- Machine tool control
- Interface modules
- Timer relays
- Elevator controls

Design

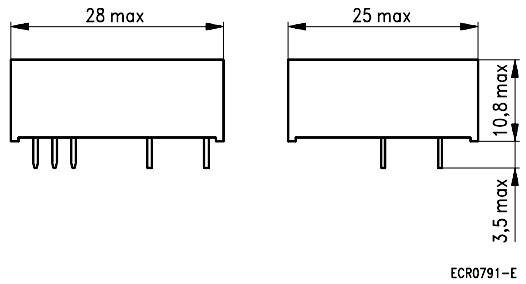
- Flat or upright versions
  with 1 changeover contact
  or
  1 make contact
  or
  1 break contact
- Changeover contact assembly with single or double contacts
- For printed circuit assembling
- Immersion cleanable

Approvals

VDE	VDE	Mark of conformity 5146
	SEV	91.1 12262.04
	CSA	File LR 89731
	UL	File E 48393

Dimensional drawing (in mm)

Flat version



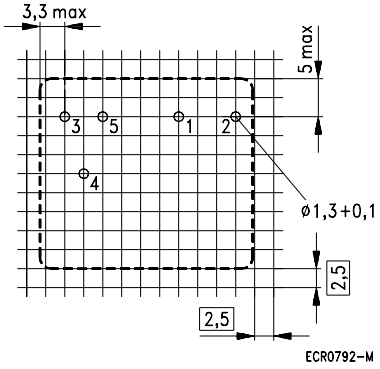
ECR0791-E

ECR0975-B

Approx. 1:1 scale

Mounting hole layout

View on the terminals



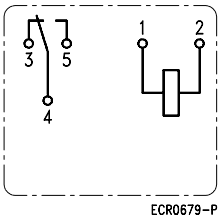
ECR0792-M

Terminals in a 2.5 mm and 2.54 mm basic grid to EN 60097 and DIN 40803, fine

Terminal assignment

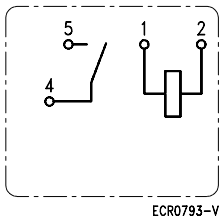
View on the terminals

Changeover contact
Clearance/creepage dist. Š≥ 4 mm



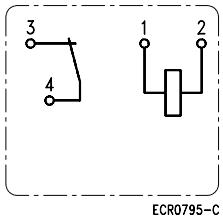
ECR0679-P

Make contact
Clearance/creepage dist. Š≥ 4 mm



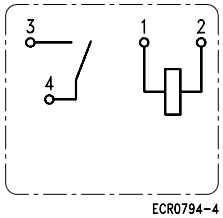
ECR0793-V

Break contact
Clearance/creepage dist.Š ≥ 8 mm



ECR0795-C

Make contact
Clearances/creepage dist. Š≥ 8 mm

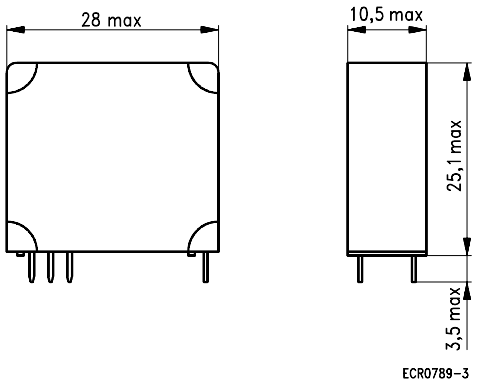


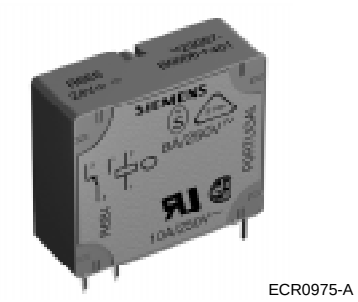
ECR0794-4

Card Relay E (KRE)

Dimensional drawing (in mm)

Upright version

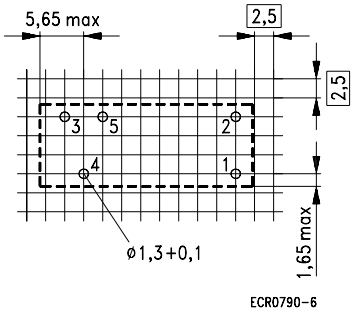




Approx. 1:1 scale

Mounting hole layout

View on the terminals

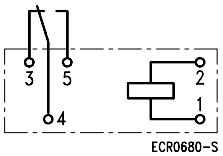


Terminals in 2.5 mm and 2.54 mm basic grid to EN 60097 and DIN 40803, fine

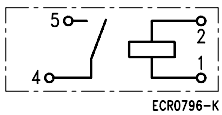
Terminal assignment

View on the terminals

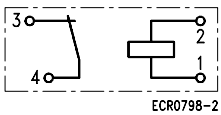
Changeover contact
Clearance/creepage dist. Š≥ 4 mm



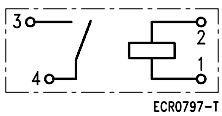
Make contact
Clearance/creepage dist. Š≥ 4 mm



Break contact
Clearance/creepage dist. Š≥ 8 mm



Make contact
Clearance/creepage dist. Š≥ 8 mm

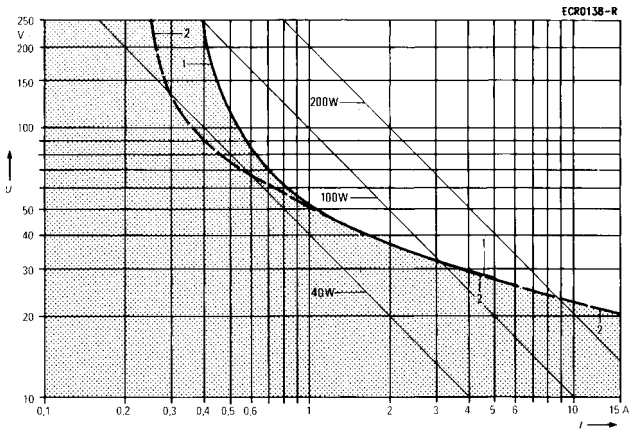


Contact data

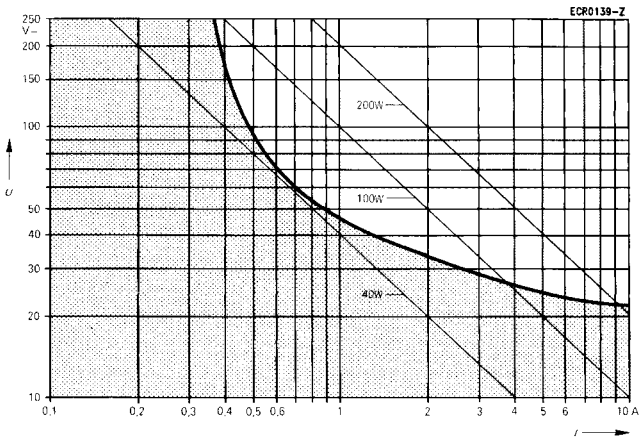
Contact category III according to VDE 0435 Part 120/10.81 B									
Ordering code, block 3/ No. of contacts and type/ contact assembly	A101	A102	A103	A201	A202	A203	A401	A402	A403
	1 change.	1 make	1 break	1 change.	1 make	1 break	1 change.	1 make	1 break
	Single contacts								
Ordering code, block 3/ No. of contacts and type/ contact assembly	B101	–	–	B201	–	–	B401	–	–
	1 change.	–	–	1 change.	–	–	1 change.	–	–
	Double contacts								
Contact material	AgNi0,15 gold-flashed			AgNi20			AgCdO		
Max. continuous current at max. ambient temperature	8 A								
Inrush current (max. 4 s for 10% duty cycle)	15 A								
Maximum switching voltage	440 V~ 300 V–								
Maximum switching capacity AC voltage DC voltage	2000 VA See load limit curve								
Recommended for loads >	1 mA, 6 V–			100 mA, 12 V~/V–			500 mA, 12 V~		
Contact resistance (initial value)/measuring current/driver voltage	≤ 100 mΩ/100 mA/6 V			≤ 100 mΩ/100 mA/12 V			≤ 100 mΩ/1A/24 V		

Note: Other contact materials and hard gold-plated contacts available on request

Load limit curve
for relays with single contacts



Load limit curve
for relays with double contacts



I = switching current
U = switching voltage
Curves: Safe shutdown, no stationary arc > 10 ms.
Max. 12.5 operations/s.

Curve 1 ———— Contact material silver, gold-flashed

Curve 2 – – – – – Contact material silver cadmium oxide

Coil data

Nominal voltages	From 6 V– to 60 V– Special voltages on request
Nominal power consumption, typ.	450 ... 500 mW
Maximum pull-in power	240 mW
Minimum release voltage	10 % of nominal voltage

Coil versions

Nominal voltage U_{nom} V–	Operating voltage range at 20 °C		Resistance at 20 °C	Number of coil Ordering code, block 2
	Operate voltage U_I V–	Max. voltage U_{II} V–	Ω	
6	4.2	10.6	80 ± 8	001
12	8.3	21.5	330 ± 33	002
24	16.8	40.0	1200 ± 180	006
48	33.6	79.0	4700 ± 700	013
60	42.0	98.0	7200 ± 1080	023

Other coil versions available on request
Data for operating range and class of operative range according to DIN IEC 255 Part 1-00/VDE 435 Part 205 available on request

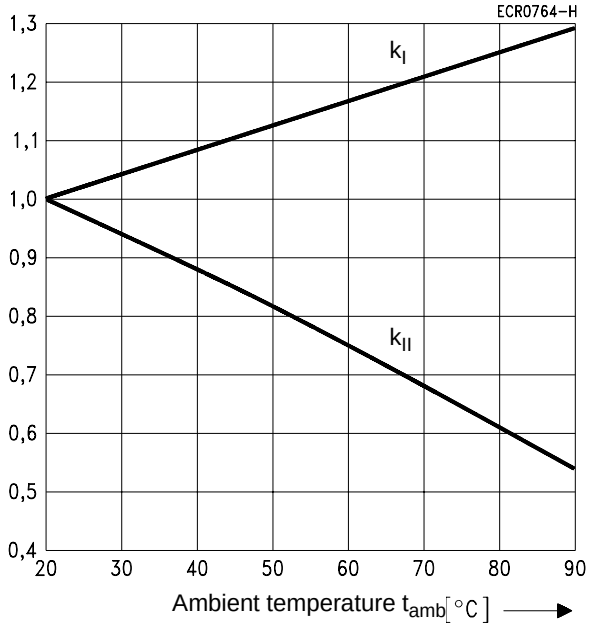
U_I = Operate voltage at 20 °C after pre-energizing with U_I without contact current

U_{II} = Maximum continuous voltage at 20 °C for $T_{c\,max}$ = 115 °C without contact loading

Operating voltage limits U_I and U_{II} depend on temperature and can be calculated by:

$U_{I\,tamb} = k_I \cdot U_{I\,20\,°C}$ and $U_{II\,tamb} = k_{II} \cdot U_{II\,20\,°C}$

t_{amb} = Ambient temperature
$U_{I\,tamb}$ = Minimum voltage at ambient temperature t_{amb}
$U_{II\,tamb}$ = Maximum voltage at ambient temperature t_{amb}
k_I a. k_{II} = Factors (dependent on temperature), see diagram
$T_{c\,max}$ = Maximum coil temperature

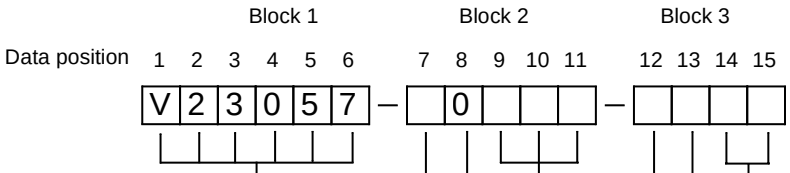


General data	
Operate time at U_{nom} and 20 °C, typ.	7 ms
Release time without/with diode in parallel, typ.	3 ms / 10 ms
Bounce time, make/break contact, typ.	0.5 ms / 3 ms
Maximum switching rate without load	1200 min^{-1}
Maximum switching rate with rated load	30 min^{-1}
Ambient temperature range according to DIN IEC 255 Part 1-00 or VDE 0435 Part 201	-40 °C ... +70 °C
Thermal resistance	75 K/W
Coil temperature rise due to rated contact current	Approx. 10 K
Maximum permissible coil temperature	115 °C
Protection class according to DIN 40050/IEC 529	Immersion cleanable IP 67
Electrical endurance at rated load	1 x 10^5 operations
Mechanical endurance	Approx. 2 x 10^7 operations
Flammability according to UL 94	V-0
Solder bath temperature/max. duration	260 °C / 5 s
Mounting position	Any
Processing information	Wherever possible, ultrasonic cleaning should not be used; if absolutely necessary, then only after consultation with the manufacturer.
Weight	20 g

Insulation	
According to VDE 0110 (2/97): insulation group/rated voltage	C/250 B/380
Dielectric test voltage, contact – coil (1 min)	4000 $V\sim_{rms}$
Dielectric test voltage between open contacts (1 min)	1000 $V\sim_{rms}$
Clearance/creepage distances	Changeover contact: 4 mm Make contact: 4 or 8 mm Break contact: 8 mm
Insulation resistance at 500 V (initial value)	> 10^4 MΩ

Card Relay E (KRE)

Ordering code



Identifier for
Card Relay E (KRE)

Design
A = flat with clearances/creepage dist. ≥ 4 mm (changeover contact or make contact)
B = upright with clearances/creepage dist.≥ 4 mm (changeover contact or make contact)
C = flat with clearances/creepage dist. ≥ 8 mm (make contact or break contact)
D = upright with clearances/creepage dist.≥ 8 mm (make contact or break contact)

Version
0 = Standard

Coil number
001 = 6 V– nominal voltage
002 = 12 V–
006 = 24 V–
013 = 48 V–
023 = 60 V–

Type of contact
A = Single contact
B = Double contact (for changeover contact only)

Contact material
1 = AgNi0,15, gold-flashed
2 = AgNi20
4 = AgCdO

Contact arrangement
01 = 1 changeover contact
02 = 1 make contact
03 = 1 break contact

Ordering example: V23057-B0006-A101
Card Relay E, upright, with clearances/creepage distancesŠ ≥ 4 mm, with 1 changeover contact (single contact), contact material AgNi0,15, gold-flashed, coil 24 V nominal voltage

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