



Card Relay (KRE)

Product Information

**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

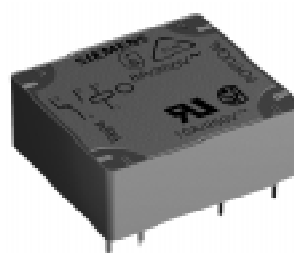
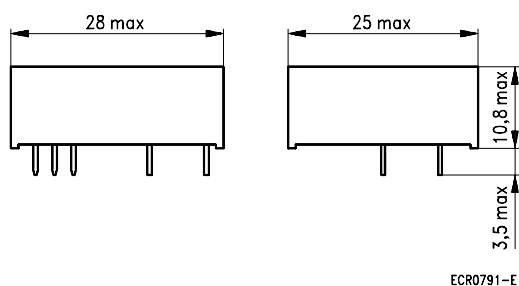
Approvals

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

Card Relay E (KRE)

Dimensional drawing (in mm)

Flat version

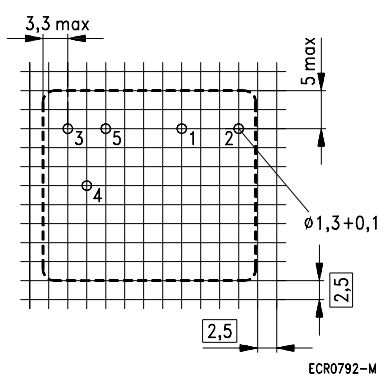


ECR0975-B

Approx. 1:1 scale

Mounting hole layout

View on the terminals



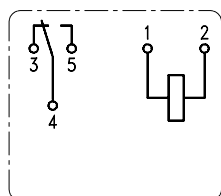
Terminals in a 2.5 mm and 2.54 mm basic grid to EN 60097 and DIN 40803, fine

Terminal assignment

View on the terminals

Changeover contact

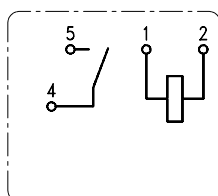
Clearance/creepage dist. $\checkmark \geq 4$ mm



ECR0679-P

Make contact

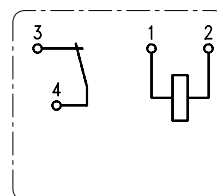
Clearance/creepage dist. $\checkmark \geq 4$ mm



ECR0793-V

Break contact

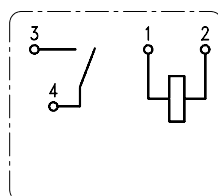
Clearance/creepage dist. $\checkmark \geq 8$ mm



ECR0795-C

Make contact

Clearances/creepage dist. $\checkmark \geq 8$ mm

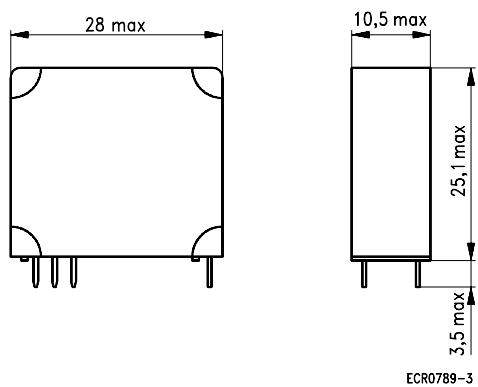


ECR0794-4

Card Relay E (KRE)

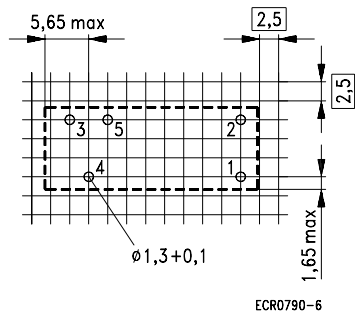
Dimensional drawing (in mm)

Upright version



Mounting hole layout

View on the terminals

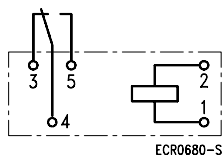


Terminals in 2.5 mm and 2.54 mm basic grid to EN 60097 and DIN 40803, fine

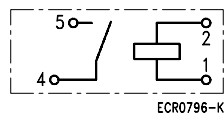
Terminal assignment

View on the terminals

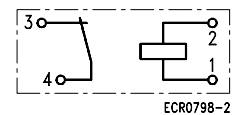
Changeover contact
Clearance/creepage dist. $\checkmark \geq 4$ mm



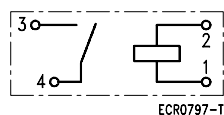
Make contact
Clearance/creepage dist. $\checkmark \geq 4$ mm



Break contact
Clearance/creepage dist. $\checkmark \geq 8$ mm



Make contact
Clearance/creepage dist. $\checkmark \geq 8$ mm



Card Relay E (KRE)

Contact data

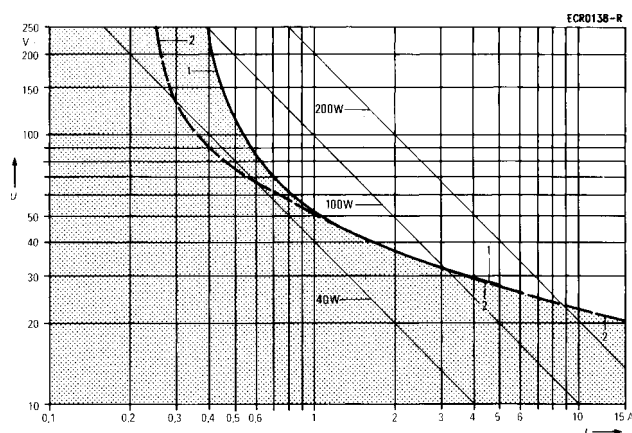
Contact category III according to VDE 0435 Part 120/10.81 B

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

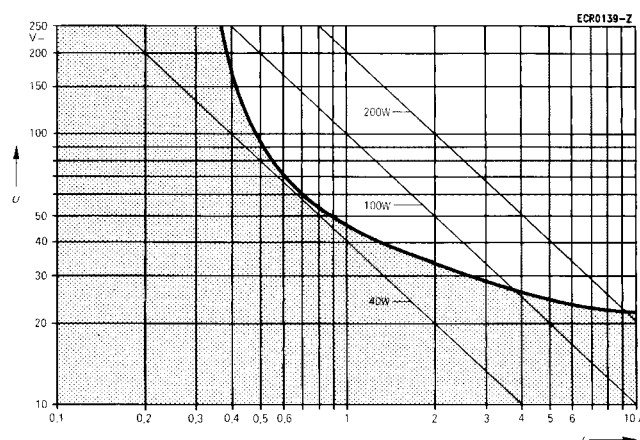
for relays with single contacts



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

Load limit curve

for relays with double contacts



Curve 1 ——— Contact material silver,
gold-flashed
 Curve 2 - - - - - Contact material
silver cadmium oxide

Card Relay E (KRE)

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 Ω	Number of coil Ordering code, block 2
	Operate voltage U_I V–	Max. voltage U_{II} V–		
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 $T_{c\ max} = 115\ ^\circ\text{C}$ without contact loading

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

$U_{I\ t\text{amb}} = k_I \cdot U_{I\ 20\ ^\circ\text{C}}$ and $U_{II\ t\text{amb}} = k_{II} \cdot U_{II\ 20\ ^\circ\text{C}}$

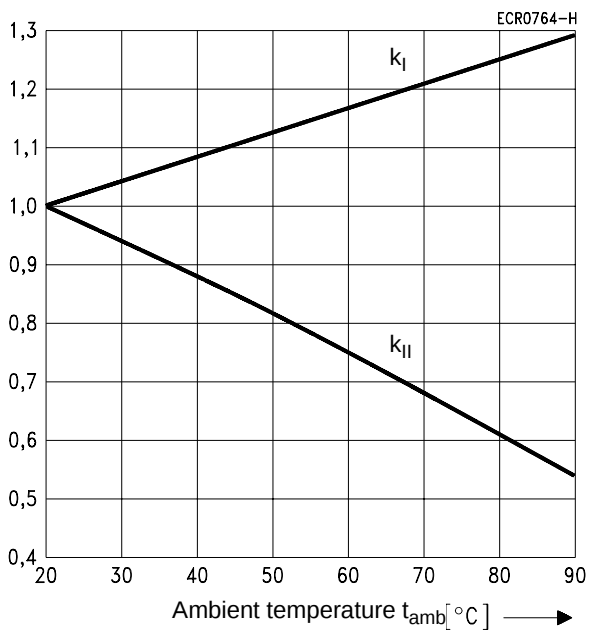
t_{amb} = Ambient temperature

$U_{I\ t\text{amb}}$ = Minimum voltage at ambient temperature t_{amb}

$U_{II\ t\text{amb}}$ = Maximum voltage at ambient temperature t_{amb}

k_I a. k_{II} = Factors (dependent on temperature), see diagram

$T_{c\ max}$ = Maximum coil temperature



Card Relay E (KRE)

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 _{rms}
Dielectric test voltage between open contacts (1 min)	1000 V _{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

	Block 1						Block 2					Block 3			
Data position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	V	2	3	0	5	7	—		0			—			
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 distances ≥ 4 mm, with 1 changeover contact (single contact), contact material AgNi0,15, gold-flashed, coil 24 V nominal voltage

Siemens in your area

Africa

Republic of South Africa

Siemens
Components
Unit 2, Fedlife Park
Tonetti Street
1685 Midrand
P.O. Box 3438
1685 Halfway House
South Africa
☎ (011) 3 15-19 50
FAX (011) 3 15-19 68

America

Argentina

Siemens S. A.
Av.Gral. Roca 1865
Ruta 8, Km. 18
RA-1650 San Martin
Pcia, de Buenos Aires
☎ (01) 7 38 71 75
FAX (01) 7 38 71 53

Brazil

Icotron S.A.
Sede Central
Vendas Mercado Nacional
Avenida Mutingua, 3650
Pirituba
BRA-05150-900
São Paulo-SP
☎ (011) 8 36-22 11
FAX (011) 8 36-27 69

Canada

Siemens Electric Ltd.
2185 Derry Road West
Mississauga
CDN-ON LSN/Canada
☎ (905) 8 19-80 00
FAX (905) 8 19-57 77

Mexico

Siemens S.A. de C.V.
Poniente 116, No. 590
Col. Und. Vallejo
Delegacion Azcapotzalco
MEX-02300 México,D.F.
☎ (05) 3 28 20 00
FAX (05) 3 28 21 92

USA

Siemens
Electromechanical
Components Inc.
Headquarters
200 S. Richland Creek Drive
USA-Princeton
Indiana 47671-0001
☎ (0201) 3 86 10 00
FAX (0201) 3 86 22 89

Asia

Hong Kong

Siemens Ltd.
58/F Central Plaza
18 Harbour Road
Wanchai
Hong Kong
☎ 25 83 33 88
FAX 28 02 98 02

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Issued by Electromechanical Components Group (EC)
Hofmannstraße 51, D-81359 Munich

India

Siemens Limited
P.O.Box 5212
Jyothi Mahal, 3rd floor
49, St.Mark's road
IND-Bangalore 560001
☎ (080) 2 27 21 01
FAX (080) 2 27 24 18

Siemens Limited
P.O.Box 6597
134, Dr. Annie Besant Road
Worly
IND-Bombay 400018
☎ (022) 4 93 87 80
FAX (022) 4 93 06 56

Siemens Limited

P.O.Box 7036
4A, Ring Road
I.P.Estate
IND-New Dehli 110002
☎ (011) 3 31 81 44
FAX (011) 3 31 41 78

Japan

Siemens K.K.
Takanawa Park Tower,19F
20-14 Higashi-Gatanda
3-chome
Shingawa-ku,
Tokyo 141
☎ (03) 54 23-85 00
FAX (03) 54 23-87 25

Korea

Siemens Ltd.
Asia Tower Building,
10th Floor
726, Yeoksam-dong,
Kangnam-Gu
C.P.O.B. 3001
Seoul-Korea
☎ (02) 5 27 77 00
FAX (02) 5 27 77 19

Singapore

Hamilton Electronic
Pte. Ltd.
159 Sin Ming Road #06-04
Amtech Building
SGP-Singapore 575625
☎ (65) 5 52 82 66
FAX (65) 5 52 82 77

Taiwan

Siemens Ltd.
6th Floor
Cathay Life Ins. Bldg.
296, Jen-Ai Road, Sec.4
P.O.B. 58284
Taipei 106
☎ (02) 3 25-48 88
FAX (02) 7 05-49 75

Thailand

Siemens Systems Ltd
Cham Issara TowerII, 25/F
2922/283 New Petchburi
Road
Bangkapi,Huay Kwang
Bangkok 10310
☎ (02) 3 08 20 11
FAX (02) 3 08 24 11

Australia

Australia

Siemens Ltd.
Melbourne Head Office
544, Church Street
Richmond Vic. 3121
AUS-Melbourne, Vic. 3121
☎ (03) 94 20 71 11
FAX (03) 94 20 73 09

Europe

Belgium

Siemens S.A.
Chaussée de Charleroi 116
B-1060 Bruxelles
☎ (02) 5 36-23 02
FAX (02) 5 36-28 57

Czech Republic

Siemens
Elektropristroje s.r.o.
Komenskeho 821
CZ-54101 Trutnov
☎ (0439) 80 51 11
FAX (0439) 80 51 98

Denmark

Siemens A/S
Borupvang 3
DK-2750 Ballerup
☎ (045) 44 77-44 77
FAX (045) 44 77-44 88

Finland

Siemens Osakeyhtiö
Perkkaa
Majurinkatu 6
P.O.B. 60
FIN-02601 Espoo
☎ (080) 51 05-1
FAX (080) 51 05-23 98

France

Schrack France Sarl
32 rue du Bois Chaland
CE 2928 - LISSES
F-91029 EVRY cedex
☎ (01) 69 11 12 50
FAX (01) 69 86 37 36

Great Britain

Siemens Electromechanical
Components
Siemens House, Oldbury
Bracknell
GB-RG 12 8FZ
☎ (01344) 3 96-6 70
FAX (01344) 3 96-6 71

Greece

Siemens A.E.
Artemidos 8
P.O.B. 61011
GR-15110 Amaroussio/
Athens
☎ (01) 68 64-1 11
FAX (01) 68 64-2 99

Hungary

SIMACOMP Kft
Lajos u. 103
H-1300 Budapest
☎ (01) 4 57-16 38
FAX (01) 4 57-16 92

Iceland

Smith & Norland H/F
Nótuni 4,
P.O.B. 519
IS-121 Reykjavik
☎ 5 11 30 00
FAX 5 11 30 11

Ireland

Siemens Ltd.
Electronic Components
Division
8 Raglan Road
IRL- Dublin 4
☎ (01) 6 03-22 00
FAX (01) 6 03-23 49

Italy

Siemens S.p.A.
Via dei Valtorta 48
I-20127 Milano
☎ (02) 66 76-1
FAX (02) 66 76-43 39

Luxembourg

Siemens S.A.
20, Rue des Peupliers
B.P.1701
L-1017 Luxembourg
☎ 4 38 43-1
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Netherlands

Siemens Nederland N.V.
Division/Dept.ONC/ECE
Prinses Beatrixlaan 26
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☎ (070) 3 33-35 65
FAX (070) 3 33-28 15

Norway

Siemens A/S
Ostre Aker vei 90
Postboks 10, Veitvet
N-0518 Oslo 5
☎ (022) 63 30 00
FAX (022) 63 38 05

Poland

Siemens Sp. z.o.o.
ul. Zupnicza 11
PI- 03-821 Warszawa
☎ (022) 6 70 90 00
FAX (022) 6 70 90 09

Portugal

Siemens S.A.
Estrada Nacional
117, Km 2,6
Apartado 60300
P-2700 Amadora
☎ (01) 4 17-80 00
FAX (01) 4 17-80 44

Spain

Siemens S.A.
Ronda de Europa No. 5
E-28760 Tres Cantos -
Madrid
☎ (01) 8 03 12 00
FAX (01) 8 03 41 59

Sweden

Siemens AB
Components
Österögaten 1
Box 46
S-16493 Kista
☎ (08) 7 03-35 00
FAX (08) 7 03-35 01

Turkey

SIMKO
Ticaret ve Sanayi A.S
Meclisi Mebusan Cad.125
TR-80040 Findikli/
Istanbul
☎ (0212) 2 51 09 00
FAX (0212) 2 52 41 34

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