

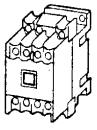
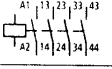
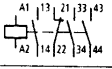
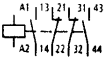
DIL R Contactor Relays

Basic Units, Modules

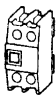
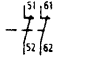
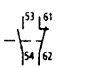
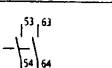
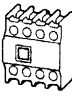
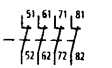

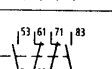
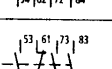
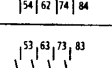
Control Relays, Contactor Relays
Electronic Timing Relays

Contacts	Rated operational current I_e	Conv. therm. current I_{th}	Circuit symbol	AC operation			Price See Price List	Std. pack
				Type	Article no.	Distinctive number and version of combination		
M = Make B = Break	AC-15 220 V 380 V 230 V 400 V 240 V 415 V	A A A						

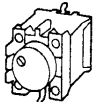
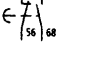

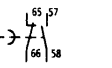
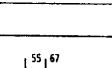
Basic units with interlocked opposing contacts

	4 M -	6	4	16		40 E	-	-	DIL R 40 (230V 50HZ) 043756		1 off
	3 M 1 B					-	31 E	-	DIL R 31 (230V 50HZ) 043768		
	2 M 2 B					-	-	22 E	DIL R 22 (230V 50HZ) 043780		

Auxiliary contact modules with interlocked opposing contacts


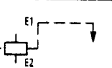
	2-pole - 2 B	6	4	16		42 E	33	24	02 DIL 098145		5 off
	1 M 1 B					51 E	42	33	11 DIL 010345		
	2 M -					60 E	51	42	20 DIL 012718		
	4-pole - 4 B	6	4	16		44 E	35	26	04 DIL 015091		5 off
	1 M 3 B					53 E	44	35	13 DIL 017464		
	2 M 2 B					62 E	53	44	22 DIL 019837		
	3 M 1 B					71 E	62	53	31 DIL 010752		
	4 M -					80 E	71	62	40 DIL 022210		

Pneumatic timer modules, time ranges of 0.2 - 30 s and 20 - 180 s

	On-delayed 1 M 1 B	4	4	10		51	42	33	TPE 11 DIL 002279		1 off
	Off-delayed 1 M 1 B	4	4	10		51	42	33	TPD 11 DIL 002280		
With TÜV* approval to VDE 0116, for fire systems											
	On-delayed 1 M 1 B	4	4	10		51	42	33	TPEH 11 DIL 046924		
	Off-delayed 1 M 1 B	4	4	10		51	42	33	TPDH 11 DIL 046925		

*TÜV = German Technical Supervisory Association

Mechanical latching module

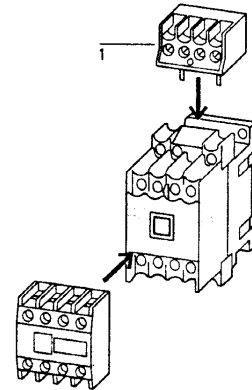
						40 E	31 E	22 E	V DIL (230V 50HZ) 043825		1 off
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DIL R Contactor Relays

Basic Units, Modules

DC operation		
Type	Price	
Article no.	See Price List	Std. pack
DIL R 40-G (24V DC) 048537		1 off
DIL R 31-G (24V DC) 048532		
DIL R 22-G (24V DC) 048526		
Other actuating voltages → Page 05/024		
Contact numbers to EN 50 011		
Terminal markings: coil to EN 50 005		
DIL R 40: supplied without front plate		
02 DIL 098145		5 off
11 DIL 010345		
20 DIL 012718		
04 DIL 015091		5 off
13 DIL 017464		
22 DIL 019837		
31 DIL 010752		
40 DIL 022210		
Version E combinations correspond to EN 50 011 and are to be preferred; other combinations correspond to EN 50 005		
TPE 11 DIL 002279		1 off
TPD 11 DIL 002280		
TPEH 11 DIL 046924		
TPDH 11 DIL 046925		
V-G DIL (24V DC) 048562		1 off

Notes



Accessories

Page

1 Amplifier module	05/020
Further accessories	05/020

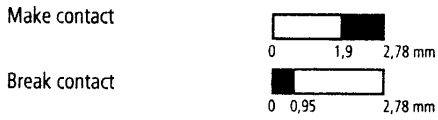
Control Relays, Contactor Relays, Electronic Timing Relays

Contact Relays

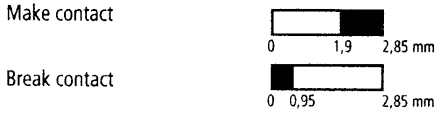
Contact Travel Diagrams

The diagrams show the closing and opening travel of the contacts of the contactor relays and auxiliary contacts at no-load. Tolerances are not taken into consideration.

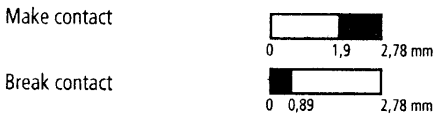
DIL ER-AC



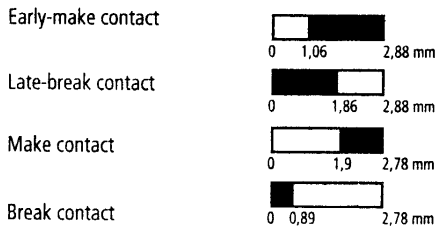
DIL ER-DC



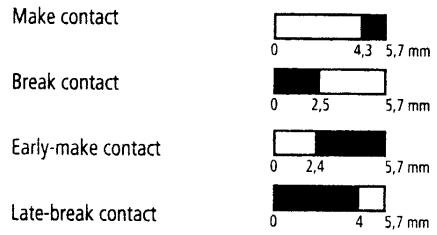
...DIL E



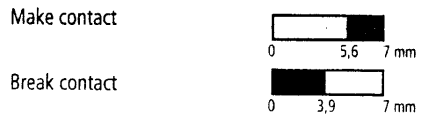
...D DIL E



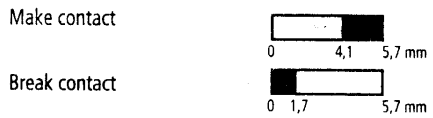
DIL R



...DIL



TP... 11 DIL



DIL ER, DIL R Contactor Relays

Technical Data

 Control Relays, Contactor Relays,
Electronic Timing Relays

				DIL ER DIL ER-G ... DIL E	DIL R ... DIL
General					
Standards				IEC/EN 60 947, VDE 0660, UL, CSA	
Lifespan, mechanical					
AC operated	Operations	$\times 10^6$	10	20	
DC operated	Operations	$\times 10^6$	20	20	
Maximum operating frequency, mechanical				Ops./h	9000
Climatic proofing				Damp heat, constant, to IEC 60 068-2-3 Damp heat, cyclic, to IEC 60 068-2-30	
Ambient temperature					
Open	Min./Max.	°C	-25/+50	-25/+50	
Enclosed	Min./Max.	°C	-25/+40	-25/+40	
Mounting position				As required, except vertical with A1/A2 at bottom	As required except suspended
Mechanical shock resistance					
Sinusoidal shock 10 ms					
Basic unit	Make/break contact	g	10/8	-	
Basic unit with auxiliary contact module	Make/break contact	g	10/8	-	
Sinusoidal shock 20 ms					
Basic unit	Make/break contact	g	-	10/6	
Basic unit with auxiliary contact module	Make/break contact	g	-	10/6	
Degree of protection				IP 20	IP 20 (DIL R) IP 00 (... DIL)
Protection against direct contact from front when actuated by a perpendicular test finger (IEC 536)				Finger- and back-of-hand proof	
Dimensions				→ Page 05/037	→ Page 05/038
Weight					
AC operated		kg	0.17	→ Page 18/023	
DC operated		kg	0.2	→ Page 18/023	
Terminal capacity					
Solid		mm ²	1 × (0.75 - 2.5)	1 × (0.75 - 4)	
		mm ²	2 × (0.75 - 2.5)	2 × (0.75 - 4)	
Flexible with ferrule to DIN 46 228		mm ²	1 × (0.75 - 1.5)	1 × (0.75 - 2.5)	
		mm ²	2 × (0.75 - 1.5)	2 × (0.75 - 2.5)	
Solid or stranded	Min.	AWG	18	18	
	Max.	AWG	14	10	
Terminal screw					
Pozidriv screwdriver	Size		M3.5	M3.5	
Standard screwdriver			2	2	
		mm	0.8 × 5.5	0.8 × 5.5	
		mm	1 × 6	1 × 6	
Tightening torque	Max.	Nm	1.2	1.2	

DIL ER, DIL R Contactor Relays

Technical Data

		DIL ER DIL ER-G ... DIL E	DIL R ... DIL	
Contacts				
Interlocked opposing contacts to ZH 1/457, including auxiliary contact module		Yes	Yes	
Rated impulse withstand voltage U_{imp}		V 6000	8000	
Overvoltage category/pollution degree		III/3	III/3	
Rated insulation voltage U_i		V AC 690	690	
Rated operational voltage U_e		V AC 600	500	
Safe isolation to IEC 536 between coil and auxiliary contacts, and between the auxiliary contacts		V AC 300	440	
Rated operational current I_e				
AC-15	220/240 V	A	6 (4) ¹⁾	6
	380/415 V	A	3 (2) ¹⁾	4
	500 V	A	1.5	1.5
DC-13 ²⁾				
Above 110 V and at L/R > 15 ms: it is essential that an arc-quenching device (RC suppressor) be used in parallel with the contacts. C: 1 μ F, R: 0.5 Ω in series				
L/R \leq 15 ms: e.g. contactor coils, solenoid valves, DC motors				
Contacts in series:				
2	24 V	A	2.5	10
2 (1)	60 V	A	2.5	10 (6)
3 (1)	110 V	A	1.5	6 (3)
3 (1)	220 V	A	0.5	5 (1)
L/R \leq 50 ms: e.g. magnetic clutches, solenoid brakes				
Contacts in series:				
2	24 V	A	–	6
2	60 V	A	–	6
3 (1)	110 V	A	–	3 (1.5)
3 (1)	220 V	A	–	2 (1)
Control circuit reliability $U_e = 24$ V, 17 V/5.4 mA				
Fault probability		H _F	< 10 ⁻⁸ , < 1 fault in 100 million operations	
Conv. thermal current I_{th}		A	10	16
Component lifespan $U_e = 240$ V				
AC-15			→ Page 05/036	→ Page 05/036
DC-13				
L/R = 50 ms: >2	Operations	$\times 10^6$	0.15	→ Page 05/036
Contacts in series at $I_e = 0.5$ A				
Short-circuit rating when taken directly from mains or transformer > 1000 VA; without welding				
Maximum overcurrent protective device	220/240 V	PKZM 0	4	4
	380/415 V	PKZM 0	4	2.4
Maximum fuse ³⁾	500 V	A gL	6	16
	500 V	A fast	10	–
Current heat loss at I_{th}				
Per contact	AC operated	W	0.2	0.8
	DC operated	W	0.3	0.8

Notes

¹⁾ Auxiliary contact module

²⁾ Making and breaking conditions to DC-13, time constant as stated

³⁾ See transparent overlay 'Fuses' for time/current characteristics (please enquire)

DIL ER, DIL R Contactor Relays

Technical Data

 Control Relays, Contactor Relays,
Electronic Timing Relays

			DIL ER DIL ER-G ... DIL E	DIL R ... DIL
Magnet systems				
Voltage tolerance				
AC operated				
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz				
	Pick-up	$\times U_c$	0.8 – 1.1	0.8 – 1.1
	Dual-frequency coil ... V, 50/60 Hz	Pick-up	$\times U_c$	0.85 – 1.1
DC operated ¹⁾				
	Pick-up	$\times U_c$	0.85 – 1.1	0.85 – 1.1
	Without auxiliary contact module	Pick-up	$\times U_c$	0.7 – 1.3
Power consumption				
AC operated				
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz				
	Pull-in	VA/W	25/22	67/52
	Sealing	VA/W	4.6/1.3	8.5/2.5
Dual-frequency coil				
	... V, 50/60 Hz at 50 Hz	Pull-in	VA/W	30/26
		Sealing	VA/W	5.4/1.6
	... V, 50/60 Hz at 60 Hz	Pull-in	VA/W	29/24
		Sealing	VA/W	3.9/1.1
DC operated				
	Pull-in = sealing	W	2.6	9.5
Duty factor				
		% DF	100	100
Switching times at 100 % U (approximate values)				
AC operated				
	Closing delay	ms	14 – 21	22
	Make contact	Opening delay	ms	8 – 18
	With auxiliary contact module	Max. closing delay	ms	45
DC operated				
	Closing delay	ms	26 – 35	38
	Make contact	Opening delay	ms	15 – 25
	With auxiliary contact module	Max. closing delay	ms	70

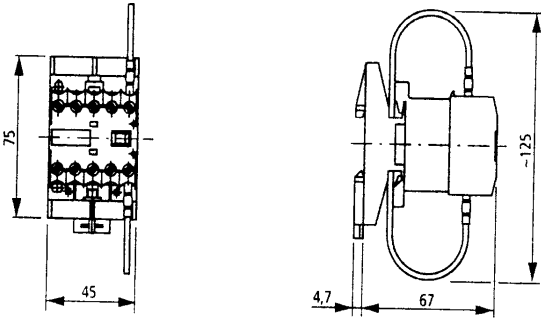
Notes

¹⁾ Smoothed DC or three-phase bridge rectifier required

DIL R Contactor Relays Dimensions

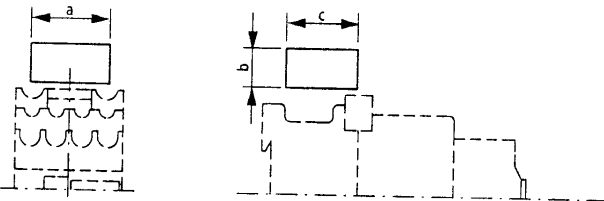
Control Relays, Contactor Relays,
Electronic Timing Relays

DIL ER... + TD DIL E 24



Suppressors, amplifier modules

RC B DIL
FD B DIL
VG B DIL
VS 1(2) DIL



	RC B DIL	FD B DIL	VG B DIL	VS 1 DIL	VS 2 DIL
a	33	33	33	45	45
b	15	15	15	26	26
c	30	30	30	55	55

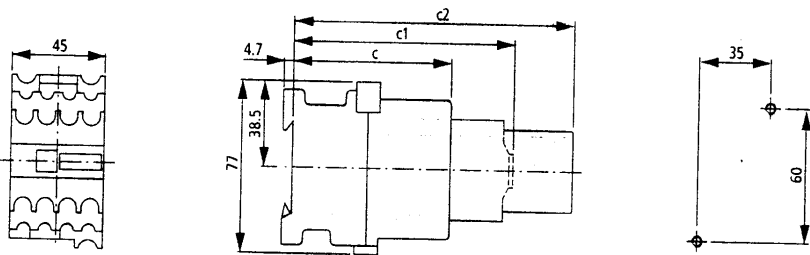
Contactor relays

DIL R 22(-G)
DIL R 22D(-G)
DIL R 31(-G)
DIL R 40(-G)

DIL R 22(-G) + ...DIL
DIL R 31(-G) + ...DIL
DIL R 40(-G) + ...DIL
DIL R 44D(-G)
DIL R 53D(-G)

DIL R 22(-G) + TPE (TPD) 11 DIL
DIL R 31(-G) + TPE (TPD) 11 DIL
DIL R 40(-G) + TPE (TPD) 11 DIL

DIL R 22(-G) + V (-G) DIL
DIL R 31(-G) + V (-G) DIL
DIL R 40(-G) + V (-G) DIL



	DIL R 22 (-G)	DIL R 31 (-G)	DIL R 40 (-G)	DIL R 22+...DIL (-G)	DIL R 31+...DIL (-G)	DIL R 40+...DIL (-G)	DIL R 22+TPE11 DIL (-G)	DIL R 22+TPD11 DIL (-G)	DIL R 31+TPE11 DIL (-G)	DIL R 31+TPD11 DIL (-G)	DIL R 40+TPE11 DIL (-G)	DIL R 40+TPD11 DIL (-G)	DIL R22+V DIL (-G)	DIL R31+V DIL (-G)	DIL R40+V DIL (-G)
c (with H DIL)	76,5	(101,5)	-	-	-	-	-	-	-	-	-	-	-	-	-
c (w/out H DIL)	74	(99)	-	-	-	-	-	-	-	-	-	-	-	-	-
c1	-	-	107	-	(132)	-	-	-	-	-	-	-	-	-	-
c2	-	-	-	-	-	136	-	161	137	162	-	-	-	-	-

c1 = With ...DIL auxiliary contact module or DIL R...D (-G) complete unit
c2 = With V (-G) DIL mechanical latching module or with TP...11 DIL pneumatic timer module