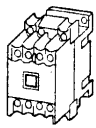
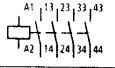
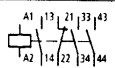
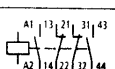
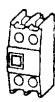
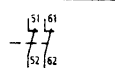
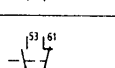
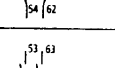
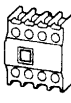

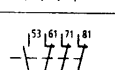
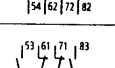
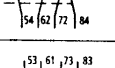
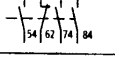
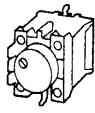
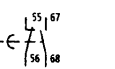
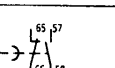
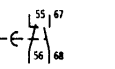
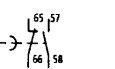

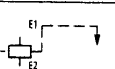


DIL R Contactor Relays

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		
		AC-15				Type Article no.						
		220 V	380 V									
		230 V	400 V									
		240 V	415 V									
M = Make B = Break		A	A	A	Distinctive number and version of combination							
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

*TÜV = German Technical Supervisory Association

V DIL (230V 50HZ)
043825

DIL R Contactor Relays

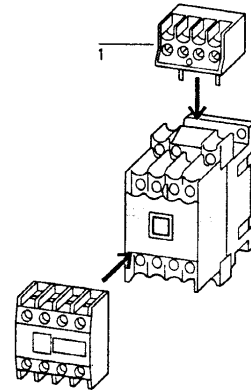
Basic Units, Modules

DC operation

Type	Price	
Article no.	See Price List	Std. pack

DIL R 40-G (24V DC) 048537		1 off	Other actuating voltages → Page 05/024
DIL R 31-G (24V DC) 048532			Contact numbers to EN 50 011 Terminal markings: coil to EN 50 005
DIL R 22-G (24V DC) 048526			DIL R 40: supplied without front plate
02 DIL 098145		5 off	Version E combinations correspond to EN 50 011 and are to be preferred; other combinations correspond to EN 50 005
11 DIL 010345			
20 DIL 012718			
04 DIL 015091		5 off	
13 DIL 017464			
22 DIL 019837			
31 DIL 010752			
40 DIL 022210			
TPE 11 DIL 002279		1 off	Version E combinations correspond to EN 50 011 and are to be preferred; other combinations correspond to EN 50 005.
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

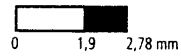
Contact Relays

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

Make contact

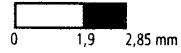


Break contact

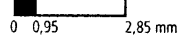


DIL ER-DC

Make contact

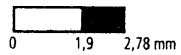


Break contact

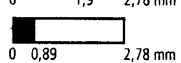


...DIL E

Make contact



Break contact

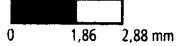


...D DIL E

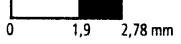
Early-make contact



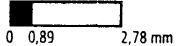
Late-break contact



Make contact

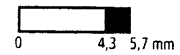


Break contact

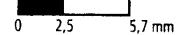


DIL R

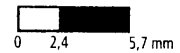
Make contact



Break contact



Early-make contact

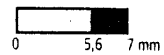


Late-break contact

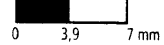


...DIL

Make contact

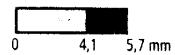


Break contact

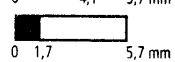


TP... 11 DIL

Make contact



Break contact



DIL ER, DIL R Contactor Relays

Technical Data

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				9000	7000
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 ≤ 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 ≤ 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 Contacts in series at $I_e = 0.5$ A	Operations	× 10 ⁶	0.15	→ Page 05/036	
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

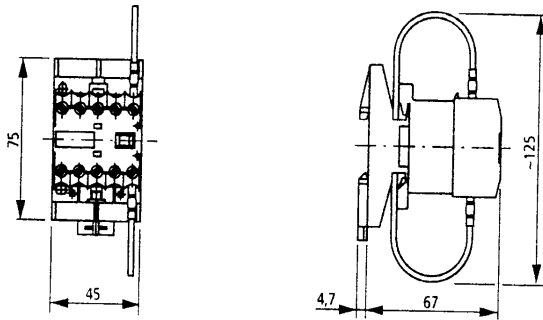
		DIL ER DIL ER-G ... DIL E		DIL R ... DIL	
Magnet systems					
Voltage tolerance					
AC operated					
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz		Pick-up	$\times U_c$	0.8 – 1.1	0.8 – 1.1
Dual-frequency coil ... V, 50/60 Hz		Pick-up	$\times U_c$	0.85 – 1.1	0.85 – 1.1
DC operated ¹⁾					
Without auxiliary contact module		Pick-up	$\times U_c$	0.85 – 1.1	0.85 – 1.1
			$\times U_c$	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	14
With auxiliary contact module		Max. closing delay	ms	45	–
DC operated					
Closing delay		ms	26 – 35	38	
Make contact		Opening delay	ms	15 – 25	9
With auxiliary contact module		Max. closing delay	ms	70	–

Notes

¹⁾ Smoothed DC or three-phase bridge rectifier required

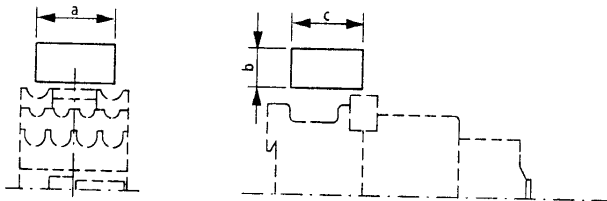
DIL R Contactor Relays Dimensions

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

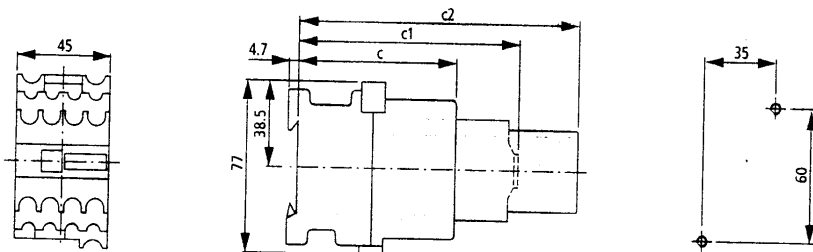
Contactor relays

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 DIL R 31 DIL R 40 DIL R 22D	(-G) (-G) (-G) (-G)	DIL R 22+...DIL DIL R 31+...DIL DIL R 40+...DIL DIL R 44D DIL R 53D	(-G) (-G) (-G) (-G) (-G)	DIL R 22+TPE11 DIL DIL R 22+TPD11 DIL DIL R 31+TPE11 DIL DIL R 31+TPD11 DIL DIL R 40+TPE11 DIL DIL R 40+TPD11 DIL	(-G) (-G) (-G) (-G) (-G) (-G)	DIL R 22+V DIL DIL R 31+V DIL DIL R 40+V DIL	(-G) (-G) (-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