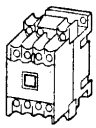
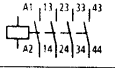
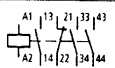
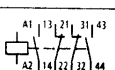
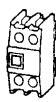
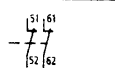
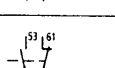
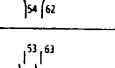
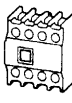
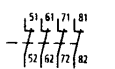
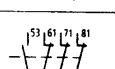
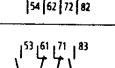
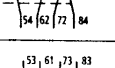
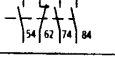
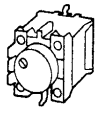
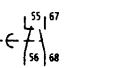
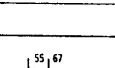
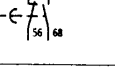
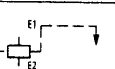


DIL R Contactor Relays

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	
		AC-15				Type Article no.			See Price List	Std. pack
		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	
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	
	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	
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

DIL R Contactor Relays

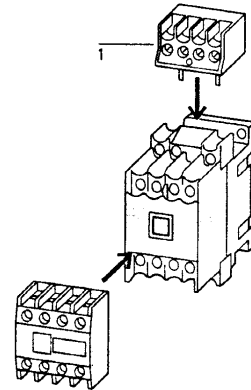
Basic Units, Modules

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

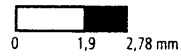
Contactors Relays

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

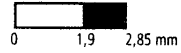


Break contact



DIL ER-DC

Make contact

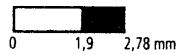


Break contact

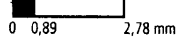


...DIL E

Make contact



Break contact

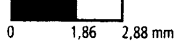


...D DIL E

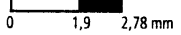
Early-make contact



Late-break contact



Make contact

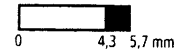


Break contact



DIL R

Make contact



Break contact



Early-make contact

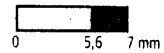


Late-break contact

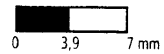


...DIL

Make contact

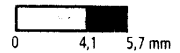


Break contact

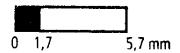


TP... 11 DIL

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	$\times 10^6$	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

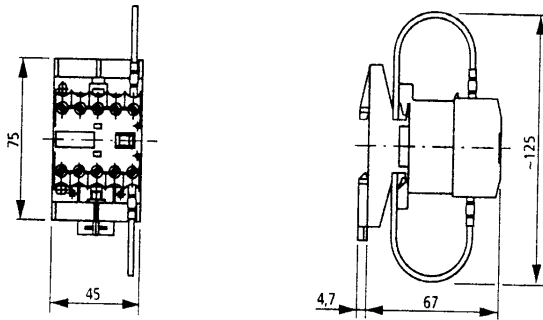
		DIL ER DIL ER-G ... DIL E		DIL R ... DIL	
Magnet systems					
Voltage tolerance					
AC operated					
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz		Pick-up	$\times U_c$	0.8 – 1.1	0.8 – 1.1
Dual-frequency coil ... V, 50/60 Hz		Pick-up	$\times U_c$	0.85 – 1.1	0.85 – 1.1
DC operated ¹⁾					
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

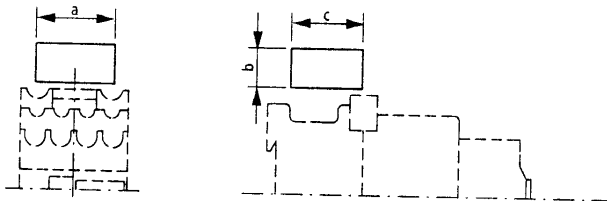
DIL R Contactor Relays Dimensions

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

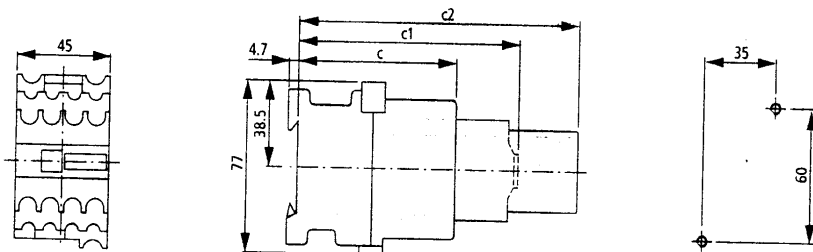
Contactor relays

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