

# DIL R Contactor Relays

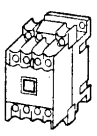
## Basic Units, Modules

Control Relays, Contactor Relays, Electronic Timing Relays



Contacts	Rated operational current I <sub>e</sub> AC-15 220 V 380 V 230 V 400 V 240 V 415 V	Conv. therm. current I <sub>th</sub>	Circuit symbol	AC operation			Price See Price List	Std. pack
				Type	Article no.	Distinctive number and version of combination		

M = Make  
B = Break

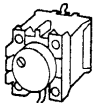
**Basic units with interlocked opposing contacts**

	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**

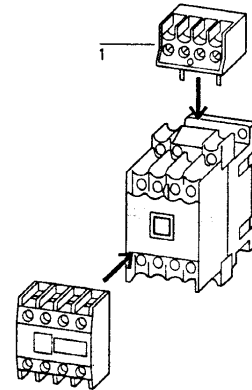
						40 E	31 E	22 E	V DIL (230V 50HZ) 043825	1 off
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# DIL R Contactor Relays

## 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

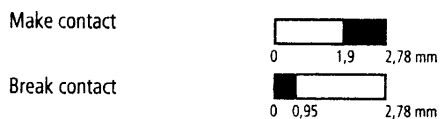
1 Amplifier module	05/020
Further accessories	05/020

# Contactors Relays

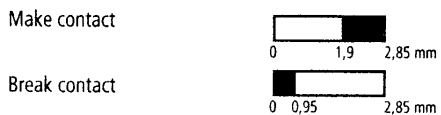
## Contact Travel Diagrams

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.

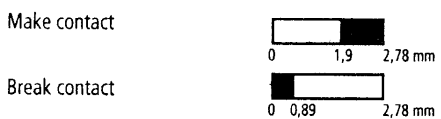
### DIL ER-AC



### DIL ER-DC



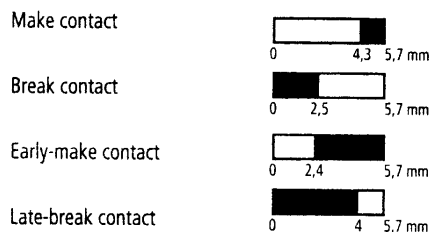
### ...DIL E



### ...D DIL E



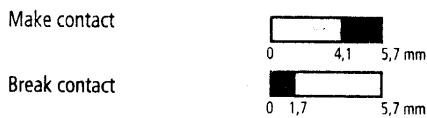
### DIL R



### ...DIL



### TP... 11 DIL



Control Relays, Contactor Relays, Electronic Timing Relays

EPR

# 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
<b>General</b>					
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 <sup>2</sup>	1 × (0.75 - 2.5)	1 × (0.75 - 4)	
		mm <sup>2</sup>	2 × (0.75 - 2.5)	2 × (0.75 - 4)	
Flexible with ferrule to DIN 46 228		mm <sup>2</sup>	1 × (0.75 - 1.5)	1 × (0.75 - 2.5)	
		mm <sup>2</sup>	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	
<b>Contacts</b>				
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) <sup>1)</sup>	6
	380/415 V	A	3 (2) <sup>1)</sup>	4
	500 V	A	1.5	1.5
DC-13 <sup>2)</sup>				
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 $\mu$ F, R: 0.5 $\Omega$ 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 <sup>3)</sup>	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**

<sup>1)</sup> Auxiliary contact module

<sup>2)</sup> Making and breaking conditions to DC-13, time constant as stated

<sup>3)</sup> 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	
<b>Magnet systems</b>					
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 <sup>1)</sup>					
	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	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	–

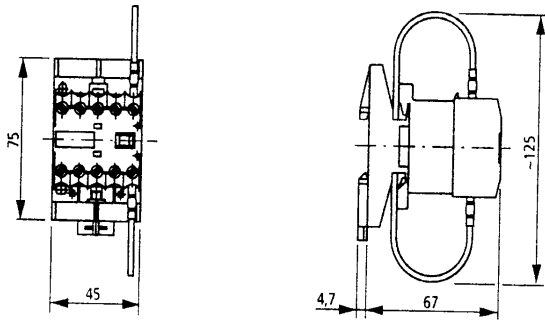
Notes

<sup>1)</sup> Smoothed DC or three-phase bridge rectifier required

# DIL R Contactor Relays Dimensions

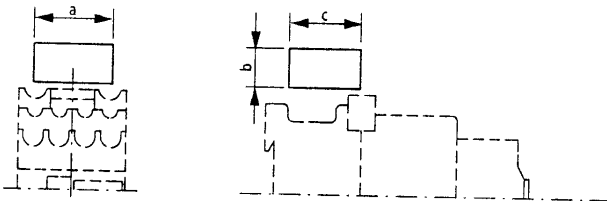
Control Relays, Contactor Relays,  
Electronic Timing Relays

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

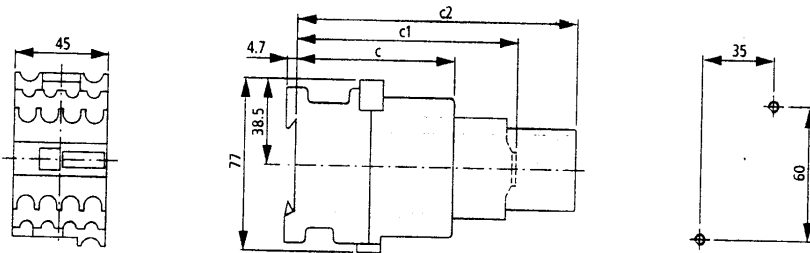
## Contactor relays

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