

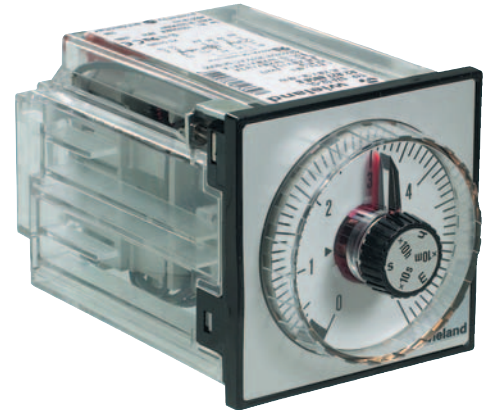
# Timer and switching relays

## ON-delay DZA 52-S L / DZA 53-S L / DZAN 52-S L / DZA 52 L

# interface

### ON-delay multi-range electromechanical timer relay

- Devices for single voltage
- Function: ON-delay (AV), DZAN 52-S L protected against power failure
- 1 setting range divided into 6 time ranges
- Contact assignment: DZA 52-S L = 1 timed and 1 instantaneous change-over contact  
DZAN 52-S L = 1 timed and 1 instantaneous change-over contact  
DZA 53-S L = 2 timed change-over contacts and  
1 instantaneous NO contact  
DZA 52 L = 2 timed change-over contacts



72 x 72



#### General information

- The electromechanical timer relays are equipped with synchronous motors and solenoid clutches.
- The time ranges are set on the front through selector switches. Infinitely variable time setting within a range is selected by a transparent rotary switch.
- The countdown indicator moves during operation from the set time towards zero.

#### Function

Upon excitation of motor and solenoid the instantaneous contact is put into the ON position and the countdown starts. When the pre-set time has elapsed, the time contact is actuated and the motor is switched off. After de-excitation, the solenoid, time element and all contacts will switch into the OFF position. If a voltage interruption occurs during the countdown, the solenoid, instantaneous contact and time element will fall into the OFF position.

The **timer relay protected against power failure DZAN 52-S L** has the same function as described above, but upon excitation the solenoid clutch is locked by a blocking pawl so that even in a no-volt condition the elapsed time is preserved. The countdown can be interrupted as often as desired. The instantaneous contact remains in the ON position even during voltage interruption. When the pre-set time has elapsed, the blocking pawl is released, the timed contacts are actuated and the motor is switched off.

**Actuation by impulse:** The timer relay protected against power failure can be actuated by an impulse applied to the clutch, as the locking action of the blocking pawl is immediate (separate motor and coil connections). The countdown starts when the motor is energized. After impulse actuation the instantaneous contact goes into the ON position until the countdown ends. When the time has elapsed, it falls back into the OFF position. The timed contact only opens for approx. 10 ms. The timed change-over contact cannot be switched into its closed position.

**Resetting:** Mechanical resetting to 0 is possible for these devices.

**Resetting of DZAN 52-S L:** Electrical and mechanical resetting to 0 is only possible for this device, if the mechanical interlock is released. If resetting is necessary after an interruption of the countdown, the resetting lever located on the front (right hand top corner) must be turned in the direction of the arrow.

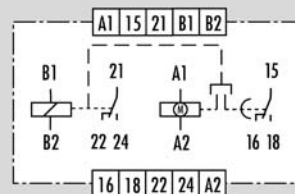
#### Accessories

Female connector plate	B 5	for panel and surface mounting
Pin holder	B 7	for panel mounting
Adapter	BT 421	for rail mounting of the female connector plate B 5
Cover	DA 1	for panel cutout
Lockable cover	V 4	
Seal	Z 1	for panel mounting

#### Circuit diagrams

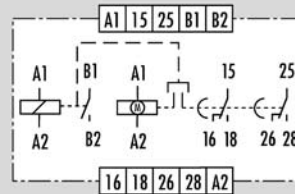
##### DZA 52-S L, DZAN 52-S L

KS 5102/3



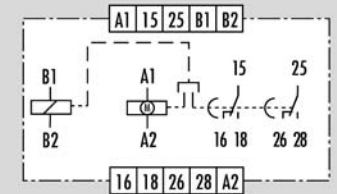
##### DZA 53-S L

KS 5151/2



##### DZA 52 L

KS 5153/2



#### Time ranges

Available setting ranges:

##### 0.1 s to 1000 s

divided into 6 time ranges

- 0.1 ... 3 s
- 0.3 ... 10 s
- 1 ... 30 s
- 3.3 ... 100 s
- 10 ... 300 s
- 33 ... 1000 s

##### 0.1 s to 30 h

divided into 6 time ranges

- 0.1 ... 3 s
- 1 ... 30 s
- 0.1 ... 3 min
- 1 ... 30 min
- 0.1 ... 3 h
- 1 ... 30 h

##### 0.2 s to 60 h

divided into 6 time ranges

- 0.2 ... 6 s
- 2 ... 60 s
- 0.2 ... 6 min
- 2 ... 60 min
- 0.2 ... 6 h
- 2 ... 60 h

# Timer and switching relays

## ON-delay DZA 52-S L / DZA 53-S L / DZAN 52-S L / DZA 52 L

### Function diagrams

#### DZA 52-S L

A1/A2 Supply voltage FD 0008  
B1/B2 Energizing quantity  
21/24 Instantaneous contact  
21/22  
15/18 Delayed contact  
15/16  
 $t_A$  = operating time  
 $t_0$  = break time, must be > returning time of the time element  
 $t_1$   
 $t_2$   
 $t_3$

operating time =  $\sum_{i=1}^n t_A$

#### DZAN 52-S L

A1/A2 Supply voltage FD 0033  
B1/B2 Energizing quantity  
21/24 Instantaneous contact  
21/22  
15/18 Delayed contact  
21/22  
 $t_A$  = operating time  
 $t_0$  = break time, must be > returning time of the time element  
 $t_1$  = closing time, must be > minimum excitation time  
 $t_2$  = opening time, refers only to the NC contact, the NO contact is not switched  
 $t_3$   
 $t_4$   
 $t_5$   
 $t_6$

operating time =  $\sum_{i=1}^n t_A$

### Function diagrams

#### DZA 53-S L

A1/A2 Energizing quantity FD 0040  
B1/B2 Instantaneous contact  
15/18, 25/28 Delayed contact  
15/16, 25/26  
 $t_A$  = operating time  
 $t_1$  = break time, must be > returning time of the time element  
 $t_2$  = closing time, must be > minimum excitation time  
 $t_3$  = opening time, refers only to the NC contact, the NO contact is not switched  
 $t_0$

operating time =  $\sum_{i=1}^n t_A$

#### DZA 52 L

A1/A2 Supply voltage FD 0011  
B1/B2 Energizing quantity  
15/18, 25/28 Delayed contact  
21/22, 25/26  
 $t_A$  = operating time  
 $t_0$  = break time, must be > returning time of the time element  
 $t_1$  = closing time, must be > minimum excitation time  
 $t_2$  = opening time, refers only to the NC contact, the NO contact is not switched  
 $t_3$

operating time =  $\sum_{i=1}^n t_A$

### Notes

- With a frequency switch located at the bottom of the housing the relay can be adapted to the relevant frequency (50 or 60 Hz). The factory pre-setting is 50 Hz.
- The relays have separate motor and solenoid connections which makes the following operating modes possible:
  1. Time accumulation: By separate actuation of the solenoid clutch and the motor, elapsed time can be stored and/or various time segments accumulated.
  2. Rapid start: Reduction of time dispersion to a minimum by keeping the motor constantly at operating voltage while only the solenoid clutch is de-energized and energized after the time has elapsed. Motor starting irregularities are thus avoided. For operating times above 60 s, the rapid start no longer has any effect on time dispersion.
  3. Standard operation: Simultaneous excitation and de-excitation of solenoid clutch and motor. Recommended for operating times above 60 s.
- Maximum repeatability is achieved with multi-range models by selecting the shortest possible time range.
- The time range on the devices has to be selected in the OFF position to avoid possible timing errors and incorrect contact switching.

### Dimension diagram

### Overview of devices/part numbers

Type	Setting range	Rated voltage	Part No.	Std. Pack
DZA 52-S L	0.1 s ... 1000 s	AC 24 V 50/60 Hz	R2.027.0210.0	1
		AC 110 – 115 V 50/60 Hz	R2.027.0030.0	1
		AC 125 – 127 V 50/60 Hz	R2.027.0040.0	1
		AC 230 V 50/60 Hz	R2.027.0090.0	1
	0.1 s ... 30 h	AC 24 V 50/60 Hz	R2.027.0320.0	1
		AC 110 – 115 V 50/60 Hz	R2.027.0270.0	1
		AC 125 – 127 V 50/60 Hz	R2.027.0300.0	1
		AC 230 V 50/60 Hz	R2.027.0070.0	1
	0.2 s ... 60 h	AC 24 V 50/60 Hz	R2.027.0330.0	1
		AC 42 V 50/60 Hz	R2.027.0170.0	1
		AC 48 V 50/60 Hz	R2.027.0220.0	1
		AC 110 – 115 V 50/60 Hz	R2.027.0250.0	1
DZAN 52-S L	0.1 s ... 1000 s	AC 125 – 127 V 50/60 Hz	R2.027.0240.0	1
		AC 230 V 50/60 Hz	R2.027.0050.0	1
		AC 24 V 50/60 Hz	R2.027.0280.0	1
		AC 110 – 115 V 50/60 Hz	R2.027.0230.0	1
	0.1 s ... 30 h	AC 230 V 50/60 Hz	R2.027.0190.0	1
		AC 24 V 50/60 Hz	R2.027.0110.0	1
		AC 110 – 115 V 50/60 Hz	R2.027.0120.0	1
		AC 230 V 50/60 Hz	R2.027.0080.0	1
0.2 s ... 60 h	AC 24 V 50/60 Hz	R2.027.0140.0	1	
	AC 110 – 115 V 50/60 Hz	R2.027.0180.0	1	
	AC 230 V 50/60 Hz	R2.027.0020.0	1	
	AC 230 V 50/60 Hz	R2.027.0260.0	1	
DZA 53-S L	0.2 s ... 60 h	AC 24 V 50/60 Hz	R2.027.0200.0	1
DZA 52 L	0.2 s ... 60 h	AC 110 – 115 V 50/60 Hz	R2.027.0130.0	1
		AC 230 V 50/60 Hz	R2.027.0060.0	1
		AC 24 V 50/60 Hz	R2.027.0200.0	1

Subject to change without further notice

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# Timer and switching relays

## ON-delay DZA 52-S L / DZA 53-S L / DZAN 52-S L / DZA 52 L

# interface

Technical data	DZA 52-S L	DZAN 52-S L	DZA 53-S L	DZA 52 L
<b>Function type</b> according to DIN VDE 0435 sec. 110:04.89	Electromechanical timer relay for single voltage			
	Item 3.13: ON-delay timer relay	Item 3.14: ON-delay timer relay protected against power failure	Item 3.12: ON-delay timer relay	Item 3.13: ON-delay timer relay
Function display	Pointer for operating time			
Function diagram	FD 0008	FD 0033	FD 0040	FD 0011
<b>Power supply circuit</b>				
Rated voltage $U_N$	See "Overview of devices"			
Rated consumption: motor at 50 Hz and UN (AC)	ca. 1.3 VA / ca. 1.1 W			
Rated consumption: coil at 50 Hz and UN (AC)	ca. 1.0 VA / ca. 0.9 W			
Rated frequency	50 and 60 Hz selectable on the device			
Operating voltage range	0.8 – 1.1 x $U_N$			
<b>Time circuit</b>				
Time setting / number of time ranges	analog / 6			
Available time ranges	See table "Time ranges"			
Recovery time	≤ 250 ms			
Minimum ON time	–	30 ms	–	–
Release value	≥ 15 % $U_N$			
Parallel loads permissible	yes			
Internal half-wave rectification	yes			
Error (average related to the full scale value)	during standard operation: Setting range > 6 s; ± 1.5 % Setting range 6 s; ± 2 %			
Dispersion	Standard operation      Rapid start			
Setting range 0.3 – 6 s	± 0.06 s		± 0.03 s	
Setting range 3 – 60 s	± 0.22 s		± 0.19 s	
Max. operating time ≥ 60 s	± 0.3 % related to the full scale value			
<b>Output circuit</b>				
Contact assignment	1 timed and 1 instantaneous change-over contact	1 timed and 1 instantaneous change-over contact	2 timed change-over contacts and 1 instantaneous NO	2 timed change-over contact
Contact material	Ag Cu			
Rated operating voltage $U_n$	AC/DC 230 V			
Max. continuous current $I_n$	5 A			
Application category according to EN 60947-5-1:1991	AC-15: $U_e$ 230 V AC, $I_e$ 2 A DC-13: $U_e$ 24 V DC, $I_e$ 2 A			
Permissible switching frequency	≤ 3600 switching cycles/h			
Mechanical life	30 x 10 <sup>6</sup> switching cycles or 3 x 10 <sup>4</sup> motor operation hours			
Response time	≤ 25 ms			
Release time	≤ 80 ms			
<b>General information</b>				
Creepage distances and clearances between the circuits	according to DIN VDE 0110-1:04.97			
Rated impulse voltage	4 kV			
overvoltage category	III			
Degree of pollution	3 outside 2 inside			
Rated voltage AC	AC 250 V			
Test voltage $U_{eff}$ 50 Hz according to DIN VDE 0110-1, table A.1	2.21 kV			
Protection degree housing front panel / housing rear panel / tab connector	IP 54/IP 20/IP 00			
Emitted interference	EN 50081-1:03.93, -2:03.94			
Noise immunity	EN 50082-2:1995			
Ambient temperature, operating range	-10 – +55 °C			
Dimension diagram	D 1-25			
Circuit diagram	KS 5102/3	KS 5102/3	KS 5151/2	KS 5153/2
Weight	0.4 kg			
Accessories	B 5, B 7, B 8, B 9, BT 421, DA 1, V 2, Z 1			
Approvals	