

## Electromechanical Time Relays

**DZ 12-S L, DZN 12-S L, DZ 12 L for single voltage**

**Function: ON-delay (AV), DZN 12-S L protected against power failure**

**1 time range**

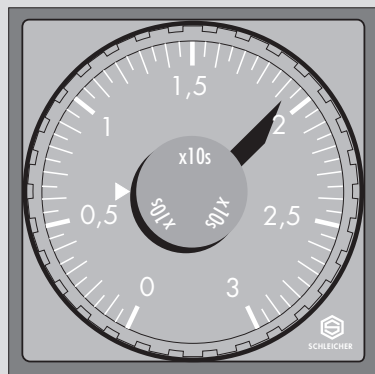
**Contact equipment: DZ 12-S L = 1 timed and 1 instantaneous changeover**

**DZN 12-S L = 1 timed and 1 instantaneous changeover**

**DZ 12 L = 2 timed changeover**

DZ 12-S L, ...

72 x 72



### General

V (see page D 3/5).

The electromechanical time relays are equipped with synchronous motors and solenoid clutches.

Infinitely variable time setting within a range is carried out with the aid of a transparent rotary knob.

The time-remaining indicator moves during operation from the set time in the direction of zero.

### Function

Upon energization of motor and solenoid, the instantaneous contact is actuated and the time delay starts. When the preset time has elapsed, the delay contact is actuated and the motor switched off.

Upon de-energization, the clutch, timing mechanism and all contacts go into their off-position. If a voltage interruption occurs during the timing cycle, the clutch, the instantaneous contact and timing mechanism go into their off-position.

The *time relay protected against voltage interruption DZN 12-S L* has the same function as described above, but upon energization, the clutch is locked by a blocking pawl, so that even in no-volt condition, the elapsed time is preserved.

The timing cycle can be interrupted as often as desired. The instantaneous contact remains in the operative position even during the voltage interruption. When the preset time has elapsed, the blocking pawl is released, the timed contacts are actuated.

**Actuation by impulse:** The time relay protected against voltage interruption can be actuated by an impulse applied to the clutch, since the locking action of the pawl is immediate (separate motor and coil connections).

The timing cycle starts when the motor is energized. Upon impulse actuation, the instantaneous contact goes into its operative position until the timing cycle ends. Upon timing-out it goes back into its off-position. The timed contact only opens for about 10 ms. The timed changeover contact cannot be switched into its closed position.

**Resetting:** If resetting is necessary after an interruption of the timing sequence, the time selector switch must be turned over the 0 marking to the end stop, or the resetting lever situated on the item's front (right hand top corner), must be turned in the direction of the arrow.

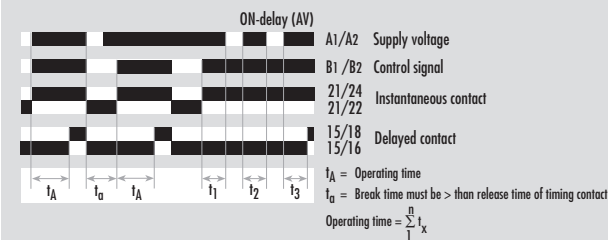
### Notes

- ▶ The relay has a frequency switch on the underside of the cover that can be set to 50 or 60 Hz, depending on the connected external supply. The factory presetting is 50 Hz.
- ▶ The relays have separate motor and solenoid connections which make the following operating modes possible:
  1. Time accumulation: By separate actuation of the solenoid clutch and of the synchronous 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 timing period. Motor starting irregularities are thus eliminated. On timing periods of over 60 s, the rapid start has no longer any effect on time dispersion.
  3. Standard operation: Simultaneous energization and de-energization of solenoid clutch and synchronous motor. Recommended for timing periods of over 60 s.
- ▶ Maximum accuracy (repeatability) is achieved with multi-range models by selecting the shortest possible timing range.
- ▶ The time range selection has to be done on the items in the off-position to avoid possible timing errors and wrong contact switching.

### Function Diagram

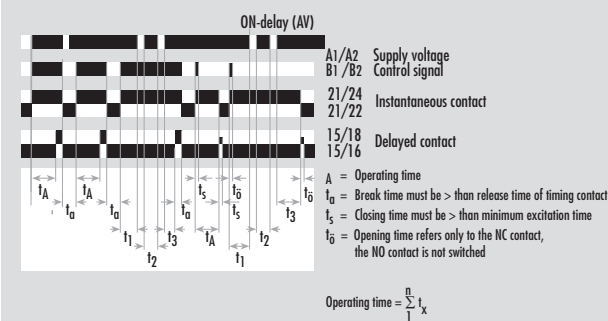
FD 0008

DZ 12-S L



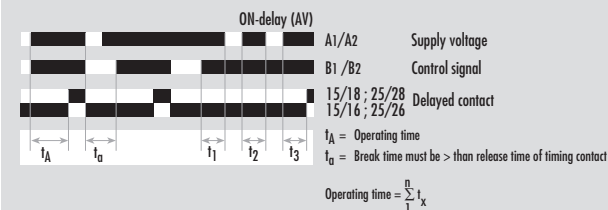
DZN 12-S L

FD 0033



DZ 12 L

FD 0011





## Product Description

The electromechanical time relays DZ 12... are single range items and available in the following time ranges:

### Time Range

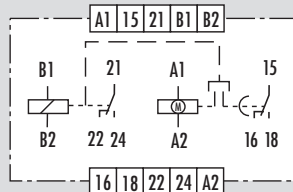
0,03	to	1 s
0,1	to	3 s
0,2	to	6 s
0,4	to	12 s
1	to	30 s
2	to	60 s
3,3	to	100 s
0,1	to	3 min
0,2	to	6 min
0,4	to	12 min
1	to	30 min
2	to	60 min
4	to	120 min
0,1	to	3 h
0,2	to	6 h
0,4	to	12 h
1	to	30 h
2	to	60 h
4	to	120 h
8	to	240 h

Type	Biggest selectable time range	Standard voltage	Special voltage
		24 V AC 110 to 115 V AC 230 V AC 50 and 60 Hz	42 V AC 48 V AC 125 to 127 V AC 240 V AC 50 and 60 Hz
		<b>Price Code</b>	
DZ 12-S L	1 s	<b>D 3/48.1</b>	
DZN 12-S L	3 s	<b>D 3/48.2</b>	
DZ 12 L	6 s	<b>D 3/48.3</b>	
	12 s		
	30 s		
	60 s		
DZ 12-S L	100s	<b>D 3/48.4</b>	
DZN 12-S L	3 min	<b>D 3/48.5</b>	
DZ 12 L	6 min	<b>D 3/48.6</b>	
DZ 12-S L	12 min	<b>D 3/48.7</b>	
DZN 12-S L	30 min	<b>D 3/48.8</b>	
DZ 12 L	60 min	<b>D 3/48.9</b>	
DZ 12-S L	120min	<b>D 3/48.10</b>	
DZN 12-S L	3 h	<b>D 3/48.11</b>	
DZ 12 L	6 h	<b>D 3/48.12</b>	
DZ 12-S L	12 h	<b>D 3/48.13</b>	
DZN 12-S L	30 h	<b>D 3/48.14</b>	
DZ 12 L	60 h	<b>D 3/48.15</b>	
DZ 12-S L	120h	<b>D 3/48.16</b>	
DZ 12-S L	240h		

## Connection Diagram

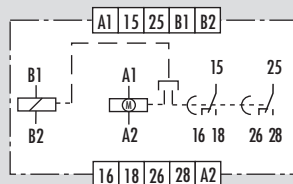
### DZ 12-S L, DZN 12-S L

KS 5102/3



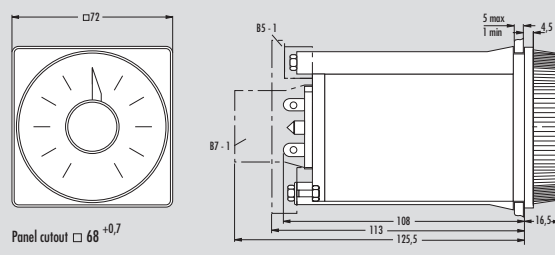
### DZ 12 L

KS 5153/2



## Dimensions

D 1-18



## Accessories

Socket connector	B 5	for panel and surface mounting
Pin holder	B 7	for panel mounting
Adaptor	BT 421	for DIN-rail mounting of the socket connector B 5
Cover	DA 1	for panel cutout
Lockable cover	V 4	
Seal	Z 1	for panel mounting

Price code for accessories (see page D 3/79).





## TECHNICAL DATA

**FUNCTION** according to DIN VDE 0435 Part 1 110:04.89

Point 3.13  
Point 3.14

Function display  
Function diagram

### POWER SUPPLY

Rated voltage  $U_N$

V AC

Rated consumption: motor at 50 Hz and  $U_N$  (AC)

VA/W

Rated consumption: coil at 50 Hz and  $U_N$  (AC)

VA/W

Rated frequency

Hz

Operating voltage range

### TIME CIRCUIT

Time setting/Number of time ranges

Available time range

Recovery time

ms

Minimum switch-ON time

ms

Release value

%  $U_N$

Permissible parallel load

Internal rectifier

Average of the error related to the full-scale value

Dispersion

Setting range 0,3 to 1 s

s

Setting range 0,3 to 10 s

s

Setting range 3,3 to 100 s

s

Maximum operating time  $\geq 3$  min

%

### OUTPUT CIRCUIT

Contact equipment

Contact material

Available modifications

Switching voltage  $U_n$

V AC/DC

Maximum continuous current  $I_n$

A

Application category according to EN 60947-5-1:1991

Permissible switching frequency

switching cycles/h

Mechanical service life

switching cycles

Response time

ms

Release time

ms

### GENERAL DATA

Creepage and clearance distances between circuits according to DIN VDE 0110-1:04.97: rated surge voltage

kV

Over voltage category

Contamination level

Design voltage

V AC

Test voltage  $U_{eff}$  50 Hz acc. to DIN VDE 0110-1, Table A.1

kV

Protection class: Housing front panel/housing rear panel/flat pin terminal

Radiated noise

Noise immunity

Ambient temperature, working range

°C

Dimensions

Connection diagram

Weight

kg

Accessories

Approvals

### GENERAL TECHNICAL SPECIFICATIONS

## DZ 12-S L

Electromechanical time relay for single voltage  
ON-delay time relay

Operating time indicator  
FD 0008

**24 42 48 110-115 125-127 230 240**

ca. 1,3/ca. 1,1

ca. 4,5/ca. 3,8

50 and 60 switchable on the device  
0,8 to 1,1 x  $U_N$

analog/1

see item description

$\leq 250$

-

$\geq 15$

yes

yes

at standard duty:

setting range  $> 6$  s;  $\pm 1,5$  %

setting range 6 s;  $\pm 2$  %

setting range 3 s;  $\pm 3$  %

setting range 1 s;  $\pm 8$  %

Standard duty Rapid start

$\pm 0,045$   $\pm 0,015$

$\pm 0,09$   $\pm 0,06$

$\pm 0,54$   $\pm 0,51$

$\pm 0,5$  related to the full-scale value

1 timed and 1 instant. changeover

Ag Cu

Ag Pd 70/30\* or Ag Cd 0\*

230/230

5

AC-15  $U_e$  230 V AC,  $I_e$  2 A

DC-13  $U_e$  24 V DC,  $I_e$  2 A

3600

$30 \times 10^6$  or  $3 \times 10^4$  motor op./hrs.

$\leq 30$

$\leq 60$

4

III

3 outside, 2 inside

250

2,21

IP 55/IP 20/IP 00

EN 50081-1:03.93, -2:03.94

EN 50082-2:1995

-10 to +55

D 1-18

KS 5102/3

0,6

cover DA 1, lockable cover V 4,

seal Z 1, socket connector B 5,

pin holder B 7,

adaptor BT 421

page i.4

page i.5

\*) Price: upon request

## DZN 12-S L

Electromechanical time relay for single voltage

ON-delay time relay protected against power failure  
Operating time indicator  
FD 0033

**24 42 48 110-115 125-127 230 240**

ca. 1,3/ca. 1,1

ca. 4,5/ca. 3,8

50 and 60 switchable on the device  
0,8 to 1,1 x  $U_N$

analog/1

see item description

$\leq 250$

30

$\geq 15$

yes

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at standard duty:

setting range  $> 6$  s;  $\pm 1,5$  %

setting range 6 s;  $\pm 2$  %

setting range 3 s;  $\pm 3$  %

setting range 1 s;  $\pm 8$  %

Standard duty Rapid start

$\pm 0,045$   $\pm 0,015$

$\pm 0,09$   $\pm 0,06$

$\pm 0,54$   $\pm 0,51$

$\pm 0,5$  related to the full-scale value

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KS 5102/3

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cover DA 1, lockable cover V 4,

seal Z 1, socket connector B 5,

pin holder B 7,

adaptor BT 421

page i.4

page i.5

\*) Price: upon request

# 3



## TECHNICAL DATA

**FUNCTION** according to DIN VDE 0435 Part 1 10:04.89

Point 3.13  
Point 3.14

Function display  
Function diagram

### POWER SUPPLY

Rated voltage  $U_N$  V AC

Rated consumption: motor at 50 Hz and  $U_N$  (AC) VA/W  
Rated consumption: coil at 50 Hz and  $U_N$  (AC) VA/W  
Rated frequency Hz  
Operating voltage range

### TIME CIRCUIT

Time setting/Number of time ranges  
Available time ranges  
Recovery time ms  
Minimum switch-ON time ms  
Release valve %  $U_N$   
Permissible parallel load  
Internal rectifier  
Average of the error related to the full-scale value

Dispersion  
Setting range 0,3 to 1 s s  
Setting range 0,3 to 10 s s  
Setting range 3,3 to 100 s s  
Maximum operating time  $\geq 3$  min %

### OUTPUT CIRCUIT

Contact equipment  
Contact material  
Available modifications  
Switching voltage  $U_n$  V AC/DC  
Maximum continuous current  $I_n$  A  
Application category according to EN 60947-5-1:1991  
Permissible switching frequency switching cycles/h  
Mechanical service life switching cycles  
Response time ms  
Release time ms

Creepage and clearance distances between circuits according to DIN VDE 0110-1:04.97: rated surge voltage kV  
Over voltage category III  
Contamination level 3 outside, 2 inside  
Design voltage V AC 250  
Test voltage  $U_{eff}$  50 Hz acc. to DIN VDE 0110-1, Table A.1 kV 2,21  
Protection class: Housing front panel/housing rear panel/flat pin terminal IP 55/IP 20/IP 00  
Radiated noise EN 50081-1:03.93, -2:03.94  
Noise immunity EN 50082-2:1995

Ambient temperature, working range °C -10 to +55  
Dimensions D 1-18  
Connection diagram KS 5153/2  
Weight kg 0,6  
Accessories cover DA 1, lockable cover V 4, seal Z 1, socket connector B 5, pin holder B 7, adaptor BT 421

Approvals

### GENERAL TECHNICAL SPECIFICATIONS

## DZ 12 L

Electromechanical time relay for single voltage  
ON-delay time relay

Operating time indicator  
FD 0011

24	42	48	110-115	125-127	230	240
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ca. 1,3/ca. 1,1  
ca. 4,5/ca. 3,8  
50 and 60 switchable on the device  
0,8 to 1,1 x  $U_N$

analog/1  
see item description  
 $\leq 250$   
-  
 $\geq 15$   
yes  
yes  
at standard duty:  
setting range  $> 6$  s;  $\pm 1,5$  %  
setting range 6 s;  $\pm 2$  %  
setting range 3 s;  $\pm 3$  %  
setting range 1 s;  $\pm 8$  %  
Standard duty Rapid start  
 $\pm 0,045$   $\pm 0,015$   
 $\pm 0,09$   $\pm 0,06$   
 $\pm 0,54$   $\pm 0,51$   
 $\pm 0,5$  related to the full-scale value

1 timed and 1 instant. changeover  
Ag Cu  
Ag Pd 70/30\* or Ag Cd 0\*  
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AC-15  $U_e$  230 V AC,  $I_e$  2 A  
DC-13  $U_e$  24 V DC,  $I_e$  2 A  
3600  
30 x 10<sup>6</sup> or 3 x 10<sup>4</sup> motor op./hrs  
 $\leq 30$   
 $\leq 60$

4  
III  
3 outside, 2 inside  
250  
2,21  
IP 55/IP 20/IP 00  
EN 50081-1:03.93, -2:03.94  
EN 50082-2:1995

-10 to +55  
D 1-18  
KS 5153/2  
0,6  
cover DA 1, lockable cover V 4, seal Z 1, socket connector B 5, pin holder B 7, adaptor BT 421  
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