



Electromechanical Time Relays

DZ 52-S L, DZN 52-S L, DZ 53-S L, DZ 52 L for single voltage

Function: ON-delay (AV), DZN 52-S L protected against power failure

1 setting range, divided into 6 or 5 time ranges

Contact equipment: DZ 52-S L = 1 timed and 1 instantaneous changeover

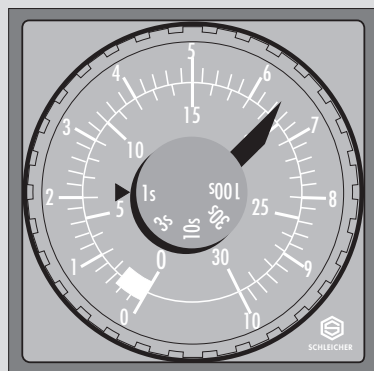
DZN 52-S L = 1 timed and 1 instantaneous changeover

DZ 53-S L = 2 timed changeover and 1 instantaneous NO

DZ 52 L = 2 timed changeover

DZ 52-S L, ...

72 x 72



General

AV (see page D 3/5).

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

The setting of the time ranges is done on the timer's front by means of a selector switch. 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 power failure DZN 52-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, and the motor is switched off.

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: These devices can be mechanically reset to "0".

Resetting DZA 52-S L: These devices can be electrically and mechanically reset to "0" only if the mechanical resetting lever has not been locked. If resetting is necessary after an interruption of the timing sequence, the time selector switch must be turned to "0".

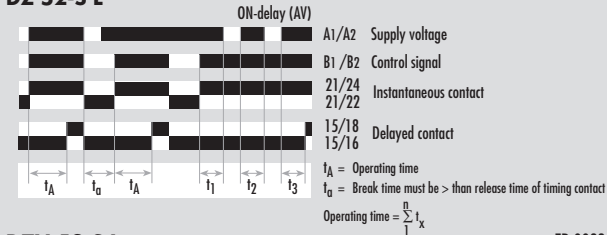
Notes

- ▶ 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.
- ▶ With the exception of the type DZ 53-S L 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

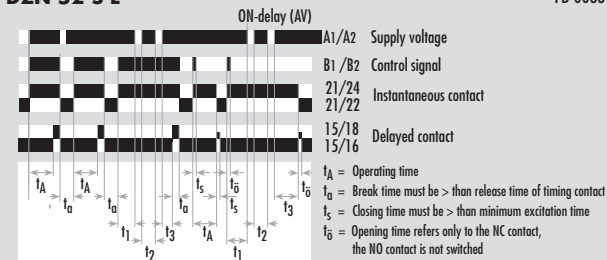
FD 0008

DZ 52-S L



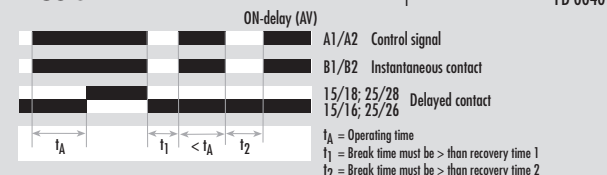
DZN 52-S L

FD 0033



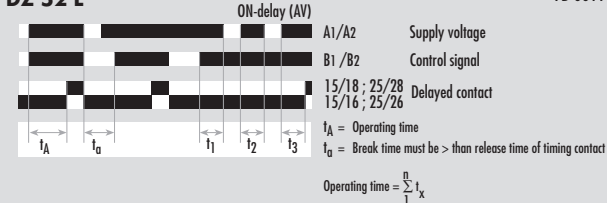
DZ 53-S L

FD 0040



DZ 52 L

FD 0011



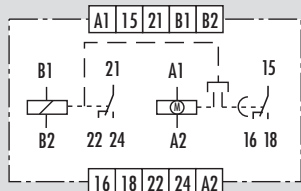
3



Connection Diagram

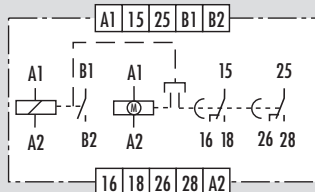
DZ 52-S L, DZN 52-S L

KS 5102/3



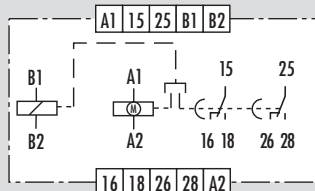
DZ 53-S L

KS 5151/2



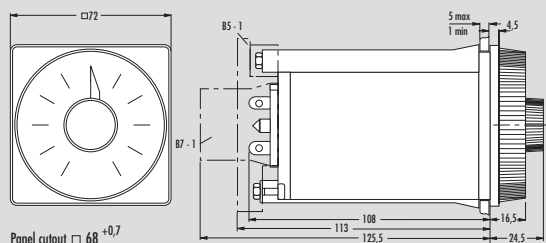
DZ 52 L

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).

Product Description

The electromechanical time relays DZ(N) 5... are available with one setting range, divided into 6 or 5 time ranges.

Setting Range	Time Range
0,1 s to 1000 s divided into 6 time ranges:	0,1 to 3 s
	0,3 to 10 s
	1 to 30 s
	3,3 to 100 s
	10 to 300 s
	33 to 1000 s
or	
0,1 s to 30 h divided into 6 time ranges:	0,1 to 3 s
	1 to 30 s
	0,1 to 3 min
	1 to 30 min
	0,1 to 3 h
	1 to 30 h
or	
0,2 s to 60 h divided into 6 time ranges:	0,2 to 6 s
	2 to 60 s
	0,2 to 6 min
	2 to 60 min
	0,2 to 6 h
	2 to 60 h
or	
0,03 s to 100 s divided into 5 time ranges:	0,03 to 1 s
	0,1 to 3 s
	0,3 to 10 s
	1 to 30 s
	3,3 to 100 s

Type	Standard voltage	Special voltage	Price Code
DZ 52-S L 100 s	24 V AC	42 V AC	D 3/36.1
DZ 52-S L 1000 s	110 to 115 V AC	48 V AC	
DZ 52-S L 30 h	230 V AC	125 to 127 V AC	
DZ 52-S L 60 h	50 and 60 Hz	240 V AC	
		50 and 60 Hz	
DZN 52-S L 100 s	24 V AC	42 V AC	D 3/36.2
DZN 52-S L 1000 s	110 to 115 V AC	48 V AC	
DZN 52-S L 30 h	230 V AC	125 to 127 V AC	
DZN 52-S L 60 h	50 and 60 Hz	240 V AC	
		50 and 60 Hz	
DZ 53-S L 100 s	24 V AC	42 V AC	D 3/36.3
DZ 53-S L 1000 s	110 to 115 V AC	48 V AC	
DZ 53-S L 30 h	230 V AC	125 to 127 V AC	
DZ 53-S L 60 h	50 and 60 Hz	240 V AC	
		50 and 60 Hz	
DZ 52 L 100 s	24 V AC	42 V AC	D 3/36.4
DZ 52 L 1000 s	110 to 115 V AC	48 V AC	
DZ 52 L 30 h	230 V AC	125 to 127 V AC	
DZ 52 L 60 h	50 and 60 Hz	240 V AC	
		50 and 60 Hz	



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
4 setting ranges available

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 ≥ 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, part 2:01.89: 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 5 kV
PProtection 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 52-S L

Electromechanical time relay for single voltage
ON-delay time relay

Operating time indicator
FD 0008

24 42 48 110-125-230 240
115 127

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/6 or 5
1. setting range 0,1 to 1000 s divided into: s. item description
2. setting range 0,1 s to 30 h divided into: s. item description
3. setting range 0,2 s to 60 h divided into: s. item description
4. setting range 0,03 s to 100 s divided into: s. item description
 ≤ 250
-
 ≥ 15
yes
yes
at standard duty:
setting range > 6 s; $\pm 1,5$ %
setting range 6 s; ± 2 %
setting range 3 s; ± 3 %
setting range 1 s; ± 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
 30×10^6 or 3×10^4 motor op./hrs
 ≤ 30
 ≤ 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 5102/2
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 52-S L

Electromechanical time relay for single voltage

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

24 42 48 110-125-230 240
115 127

ca. 1,3/ca. 1,1
ca. 4,5/ca. 3,8
50 and 60 switchable on the device
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3. setting range 0,2 s to 60 h divided into: s. item description
4. setting range 0,03 s to 100 s divided into: s. item description
 ≤ 250
30
 ≥ 15
yes
yes
at standard duty:
setting range > 6 s; $\pm 1,5$ %
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III
3 outside, 2 inside
250
2,21
IP 55/IP 20/IP 00
EN 50081-1:03.93, -2:03.94
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-10 to +55
D 1-18
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cover DA 1, lockable cover V 4,
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pin holder B 7,
adaptor BT 421
page i.4

page i.5



TECHNICAL DATA

FUNCTION according to DIN VDE 0435 Part 110:04.89

Point 3.12
Point 3.13

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
4 setting ranges available

Recovery time ms
Minimum switch-ON time ms
Release value % U_N
Permissible parallel load yes
Internal rectifier yes
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 ≥ 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, part 2:01.89: 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 5 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 5102/2
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 53-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/6 or 5
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4. setting range 0,03 s to 100 s divided into: s. item description
 ≤ 250
-
 ≥ 15
yes
yes

setting range > 6 s; $\pm 1,5$ %
setting range 6 s; ± 2 %
setting range 3 s; ± 3 %
setting range 1 s; ± 8 %

$\pm 0,045$
 $\pm 0,09$
 $\pm 0,54$
 $\pm 0,5$ related to the full-scale value

2 timed changeover, 1 instant. NO
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 x 10⁶ or 3 x 10⁴ motor op./hrs
 ≤ 30
 ≤ 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 5102/2
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

DZ 52 L

Electromechanical time relay for single voltage

ON-delay time relay
Operating time indicator
FD 0033

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 ≤ 250
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at standard duty:

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setting range 1 s; ± 8 %

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-10 to +55
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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
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page i.5

*) Price: upon request