

Electromechanical Time Relay

SZA 52-S, SZAN 52-S, SZA 52, SZA 54-2S for single voltage

Function: ON-delay (AV), SZAN 52-S with protection against power failure

1 setting range divided into 6 time ranges

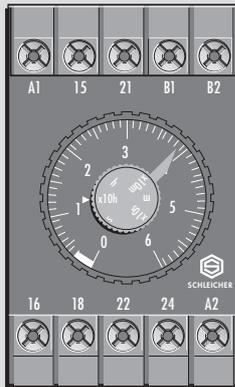
Contact equipment: SZA 52-S = 1 timed and 1 instantaneous changeover

SZAN 52-S = 1 timed and 1 instantaneous changeover

SZA 52 = 2 time changeover

SZA 54-2S = 1 timed and 1 instant. NC, 1 timed and 1 instant. NO

SZA 52-S, ...



General

AV (see page S 1/3).

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

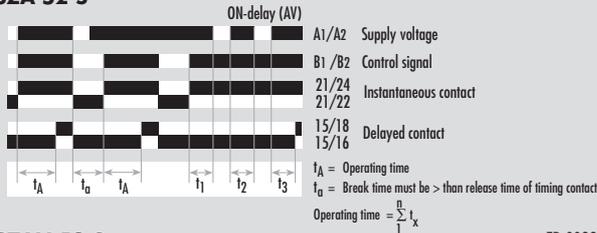
Upon energization of motor and solenoid the instantaneous contact is actuated and the time delay starts. When the preset time has elapsed, the delay contact is actuated and the motor switched off.

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.

Function Diagram

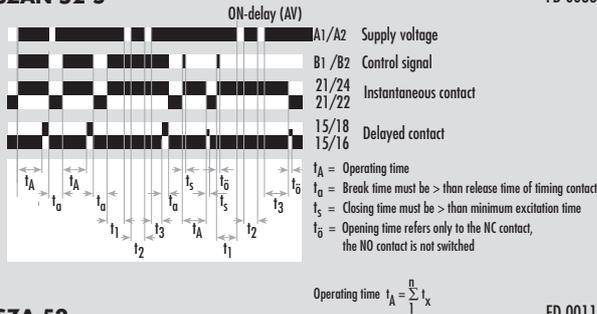
FD 0008

SZA 52-S



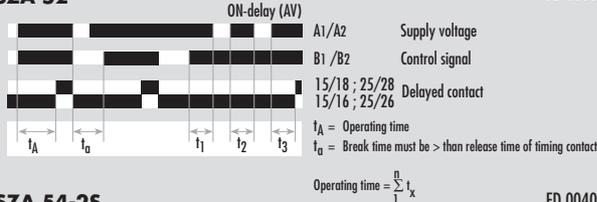
FD 0033

SZAN 52-S



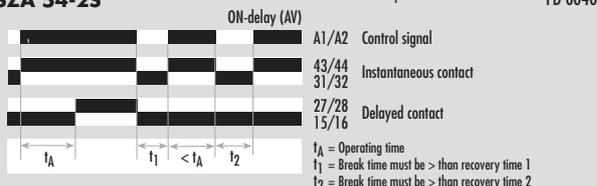
FD 0011

SZA 52



FD 0040

SZA 54-2S



The *time relay protected against power failure SZAN 52-S* 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 power failure 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.

Note

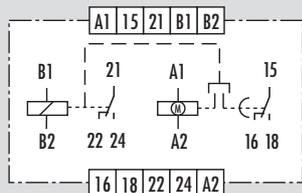
- ▶ The relay has a frequency switch on the underside of the cover that can be set to 50 or 60 Hz, depending on the connected external supply. The factory presetting is 50 Hz.
- ▶ With the exception of the type SZA 54-2S, the relays have separate motor and solenoid connections which make the following operating modes possible:
 1. Time accumulation: By separate actuation of the solenoid clutch and 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 on the items has to be done in the off-position to avoid possible timing errors and wrong contact switching.



Connection Diagram

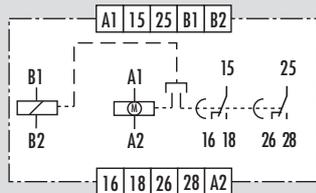
SZA 52-S, SZAN 52-S

KS 5102/3



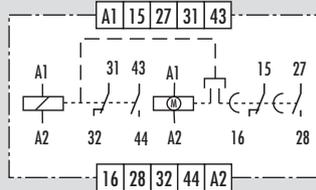
SZA 52

KS 5153/2



SZA 54-2S

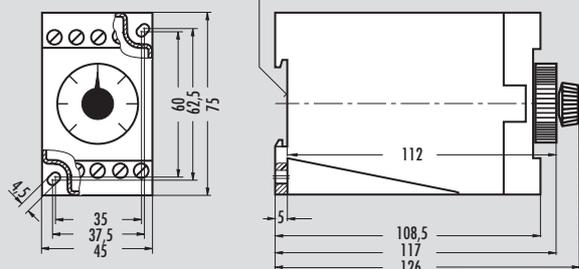
KS 5155/2



Dimensions

S 3-9

for DIN-rail acc. to EN 50022



Product Description

The electromechanical time relays SZA 5... are available in 1 setting range, divided into 6 time ranges.

Setting Range	Time Range
0,15 s to 1000 s divided into :	0,15 to 3 s
	0,5 to 10 s
	1,5 to 30 s
	5 to 100 s
	15 to 300 s
	50 to 1000 s
or	
0,15 s to 30 h divided into :	0,15 to 3 s
	1,5 to 30 s
	0,15 to 3 min
	1,5 to 30 min
	0,15 to 3 h
	1,5 to 30 h
or	
0,3 s to 60 h divided into :	0,3 to 6 s
	3 to 60 s
	0,3 to 6 min
	3 to 60 min
	0,3 to 6 h
	3 to 60 h

Type	Standard voltage	Special voltage	Price Code
SZA 52-S 1000 s SZA 52-S 30 h SZA 52-S 60 h	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	S 1/35.1
SZAN 52-S 60 h	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	S 1/35.2
SZA 52 60 h	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	S 1/35.3
SZA 54-2S 60 h	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	S 1/35.4

Accessories

Cover Z 29 (sealable transparent cover)

Price code for accessories (see page S 1/72).



TECHNICAL DATA

FUNCTION according to DIN VDE 0435 Part 110:04.89

Function display Point 3.13
Function diagram Point 3.14

POWER SUPPLY

Rated voltage U_N V AC

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

TIME CIRCUIT

Time setting/Number of time ranges
3 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 6 s s
Setting range 3 to 60 s s
Maximum operating time ≥ 60 s %

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 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/terminals acc. to DIN VDE 0470 Sec. 1:11.92 IP 30/IP 20
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 S 3-9
Connection diagram KS 5102/3
Weight kg 0,35
Accessories cover Z 29
Approvals page i.4

GENERAL TECHNICAL SPECIFICATIONS

SZA 52-S

Electromechanical time relay for single voltage
ON-delay time relay

Pointer for operating time
FD 0008

24 42 48 110-115 125-127 230 240

ca. 1,3
ca. 1,1
ca. 1,0
ca. 0,9
50 and 60 switchable on the device
0,8 to 1,1 x U_N

analog/6

1. setting range 0,15 to 1000 s
divided into: s. item description
2. setting range 0,15 s to 30 h
divided into: s. item description
3. setting range 0,3 s to 60 h
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 %
Standard duty Rapid start
 $\pm 0,06$ $\pm 0,03$
 $\pm 0,22$ $\pm 0,19$
 $\pm 0,3$ related to the full-scale value

1 timed and 1 instant. changeover
AgCdO
Ag Pd 70/30*
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
 3×10^6 or 10^4 motor operations
 ≤ 25
 ≤ 60

4
III
3 outside, 2 inside
250
2,21
IP 30/IP 20
EN 50081-1:03.93, -2:03.94
EN 50082-2:1995

-10 to +55
S 3-9
KS 5102/3
0,35
cover Z 29
page i.4

page i.5

*) Price: upon request

SZAN 52-S

Electromechanical time relay for single voltage
ON-delay time relay protected against power failure
Pointer for operating time
FD 0033

24 42 48 110-115 125-127 230 240

ca. 1,3
ca. 1,1
ca. 1,0
ca. 0,9
50 and 60 switchable on the device
0,8 to 1,1 x U_N

analog/6

1. setting range 0,15 to 1000 s
divided into: s. item description
2. setting range 0,15 s to 30 h
divided into: s. item description
3. setting range 0,3 s to 60 h
divided into: s. item description

≤ 250
30
 ≥ 15
yes
yes
at standard duty:
setting range > 6 s; $\pm 1,5$ %
setting range 6 s; ± 2 %
setting range 3 s; ± 3 %
Standard duty Rapid start
 $\pm 0,06$ $\pm 0,03$
 $\pm 0,22$ $\pm 0,19$
 $\pm 0,3$ related to the full-scale value

1 timed and 1 instant. changeover
AgCdO
Ag Pd 70/30*
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
 3×10^6 or 10^4 motor operations
 ≤ 25
 ≤ 60

4
III
3 outside, 2 inside
250
2,21
IP 30/IP 20
EN 50081-1:03.93, -2:03.94
EN 50082-2:1995

-10 to +55
S 3-9
KS 5102/3
0,35
cover Z 29
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page i.5

*) Price: upon request

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TECHNICAL DATA

FUNCTION according to DIN VDE 0435 Part 110:04.89

Point 3.13
Point 3.12

Function display
Function diagram

POWER SUPPLY

Rated voltage U_N V AC

Rated consumption: motor at 50 Hz and U_N (AC) VA
 Rated consumption: motor at 50 Hz and U_N (AC) W
 Rated consumption: coil at 50 Hz and U_N (AC) VA
 Rated consumption: coil at 50 Hz and U_N (AC) 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 value % U_N
 Permissible parallel load yes
 Internal rectifier yes
 Average of the error related to the full-scale value at standard duty:
 setting range > 6 s; $\pm 1,5\%$
 setting range 6 s; $\pm 2\%$
 setting range 3 s; $\pm 3\%$
 Standard duty Rapid start
 $\pm 0,06$ $\pm 0,03$
 $\pm 0,22$ $\pm 0,19$
 $\pm 0,3$ related to the full-scale value

OUTPUT CIRCUIT

Contact equipment
 Contact material AgCdO
 Available modifications Ag Pd 70/30*
 Switching voltage U_n V AC/DC 230/230
 Maximum continuous current I_n A 5
 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 switching cycles/h 3600
 Mechanical service life switching cycles 3×10^6 or 10^4 motor operations
 Response time ms ≤ 25
 Release time ms ≤ 60

GENERAL DATA

Creepage and clearance distances between circuits according to DIN VDE 0110-1:04.97: rated surge voltage kV 4
 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/terminals acc. to DIN VDE 0470 Sec. 1:11.92 IP 30/IP 20
 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 S 3-9
 Connection diagram KS 5153/2
 Weight kg 0,35
 Accessories cover Z 29
 Approvals page i.4

GENERAL TECHNICAL SPECIFICATIONS

SZA 52

Electromechanical time relay for single voltage
ON-delay time relay

Pointer for operating time
FD 0011

24 42 48 110-115 125-127 230 240

ca. 1,3
ca. 1,1
ca. 1,0
ca. 0,9
50 and 60 switchable on the device
0,8 to 1,1 x U_N

analog/6
setting range 0,3 s to 60 h
divided into: s. item description

≤ 250
-
 ≥ 15
yes
yes
at standard duty:
setting range > 6 s; $\pm 1,5\%$
setting range 6 s; $\pm 2\%$
setting range 3 s; $\pm 3\%$
Standard duty Rapid start
 $\pm 0,06$ $\pm 0,03$
 $\pm 0,22$ $\pm 0,19$
 $\pm 0,3$ related to the full-scale value

2 timed changeover

AgCdO
Ag Pd 70/30*
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
 3×10^6 or 10^4 motor operations
 ≤ 25
 ≤ 60

4
III
3 outside, 2 inside
250
2,21
IP 30/IP 20
EN 50081-1:03.93, -2:03.94
EN 50082-2:1995

-10 to +55
S 3-9
KS 5153/2
0,35
cover Z 29
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*) Price: upon request

SZA 54-2S

Electromechanical time relay for single voltage

ON-delay time relay

Pointer for operating time
FD 0040

24 42 48 110-115 125-127 230 240

ca. 1,3
ca. 1,1
ca. 1,0
ca. 0,9
50 and 60 switchable on the device
0,8 to 1,1 x U_N

analog/6
setting range 0,3 s to 60 h
divided into: s. item description

≤ 250
-
 ≥ 15
yes
yes
at standard duty:
setting range > 6 s; $\pm 1,5\%$
setting range 6 s; $\pm 2\%$
setting range 3 s; $\pm 3\%$
Standard duty Rapid start
 $\pm 0,06$ $\pm 0,03$
 $\pm 0,22$ $\pm 0,19$
 $\pm 0,3$ related to the full-scale value

1 timed and 1 instantaneous NC and 1 timed and 1 instantaneous NO

AgCdO
Ag Pd 70/30*
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
 3×10^6 or 10^4 motor operations
 ≤ 25
 ≤ 60

4
III
3 outside, 2 inside
250
2,21
IP 30/IP 20
EN 50081-1:03.93, -2:03.94
EN 50082-2:1995

-10 to +55
S 3-9
KS 5155/2
0,35
cover Z 29
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*) Price: upon request