

Timer and switching relays

ON-delay SZA 52-S / SZA 52 / SZAN 52-S / SZA 54-2S

ON-delay multi-range electromechanical timer relay

- Devices for single voltage
- Function: ON-delay (AV), SZAN 52-S protected against power failure
- 1 setting range divided into 6 time ranges
- Contact assignment: SZA 52-S = 1 timed and 1 instantaneous change-over contact
 SZAN 52-S = 1 timed and 1 instantaneous change-over contact
 SZA 52 = 2 timed change-over contact
 SZA 54-2S = 1 timed and 1 instantaneous normally closed contact (NC)
 1 timed and 1 instantaneous normally open contact (NO)



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 means of a transparent rotary switch.
- The countdown indicator moves during operation from the set time value towards zero.

Function

Upon excitation of motor and solenoid the instantaneous contact is put in 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 SZAN 52-S** 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.

Accessories

Cover Z 29 sealable transparent cover

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

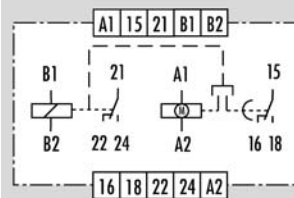
divided into 6 time ranges

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

Circuit diagrams

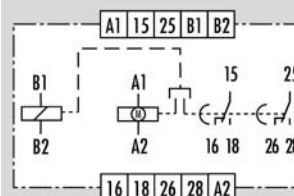
SZA 52-S, SZAN 52-S

KS 5102/3



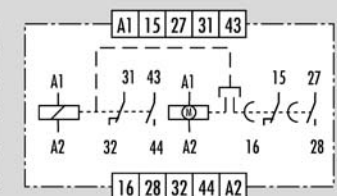
SZA 52

KS 5153/2



SZA 54-2S

KS 5155/2

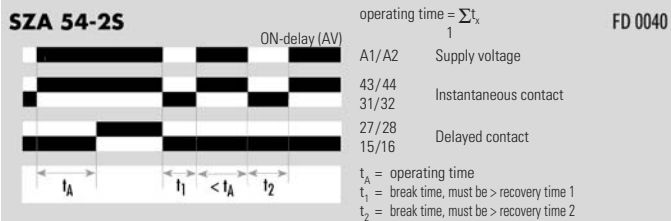
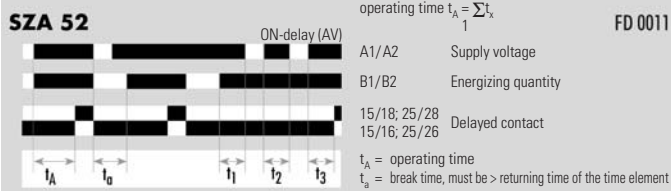
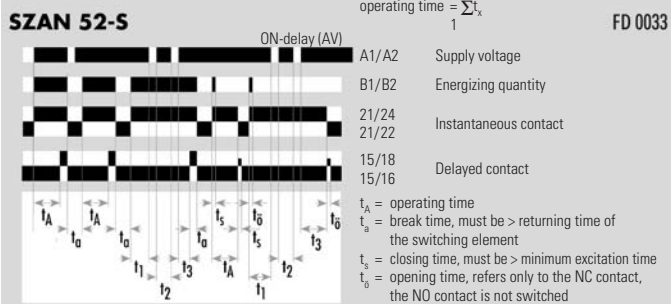
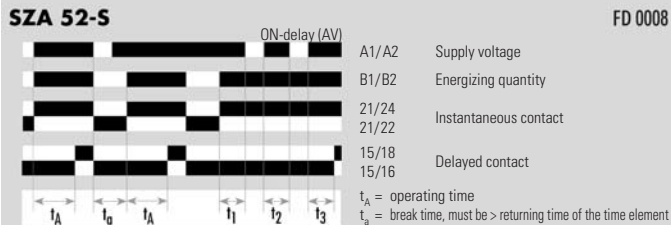


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interface

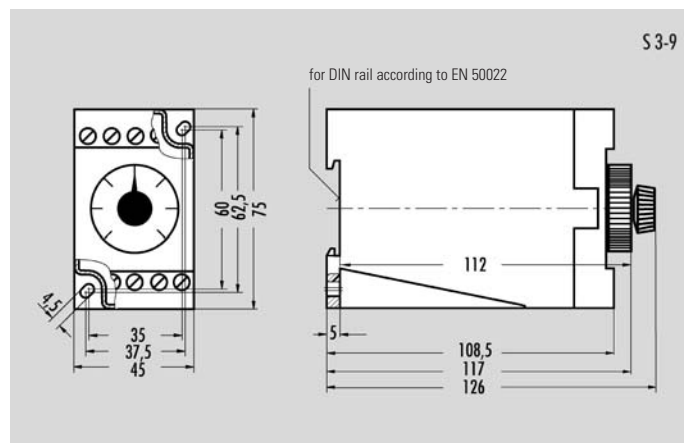
Function diagrams



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.
- Except for type SZA 54-2S, the relays have separate motor and solenoid connections which makes the following operating modes possible:
 - Time accumulation: By separate actuation of the solenoid clutch and the motor, elapsed time can be stored and/or various time segments accumulated.
 - 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.
 - 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 the devices/Part numbers

Type	Setting range	Rated voltage	Part No.	Std. Pack
SZA 52-S	0.1 s ... 1000 s	AC 24 V 50/60 Hz	R2.026.0360.0	1
		AC 110 – 115 V 50/60 Hz	R2.026.0100.0	1
		AC 230 V 50/60 Hz	R2.026.0160.0	1
	0.1 s ... 30 h	AC 24 V 50/60 Hz	R2.026.0260.0	1
		AC 110 – 115 V 50/60 Hz	R2.026.0010.0	1
		AC 230 V 50/60 Hz	R2.026.0350.0	1
	0.2 s ... 60 h	AC 24 V 50/60 Hz	R2.026.0080.0	1
		AC 42 V 50/60 Hz	R2.026.0090.0	1
		AC 48 V 50/60 Hz	R2.026.0250.0	1
AC 110 – 115 V 50/60 Hz		R2.026.0130.0	1	
AC 230 V 50/60 Hz		R2.026.0070.0	1	
AC 230 V 50/60 Hz		R2.026.0310.0	1	
SZAN 52-S	0.1 s ... 1000 s	AC 24 V 50/60 Hz	R2.026.0030.0	1
		AC 230 V 50/60 Hz	R2.026.0050.0	1
	0.1 s ... 30 h	AC 24 V 50/60 Hz	R2.026.0340.0	1
		AC 110 – 115 V 50/60 Hz	R2.026.0270.0	1
	0.2 s ... 60 h	AC 230 V 50/60 Hz	R2.026.0020.0	1
		AC 24 V 50/60 Hz	R2.026.0300.0	1
SZA 52	0.2 s ... 60 h	AC 110 – 115 V 50/60 Hz	R2.026.0290.0	1
		AC 230 V 50/60 Hz	R2.026.0310.0	1
		AC 24 V 50/60 Hz	R2.026.0170.0	1
SZA 54-2S	0.2 s ... 60 h	AC 110 – 115 V 50/60 Hz	R2.026.0200.0	1
		AC 230 V 50/60 Hz	R2.026.0220.0	1
		AC 24 V 50/60 Hz	R2.026.0150.0	1
		AC 125 – 127 V 50/60 Hz	R2.026.0060.0	1
		AC 230 V 50/60 Hz	R2.026.0330.0	1

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Technical data	SZA 52-S	SZAN 52-S	SZA 52	SZA 54-2S
Function type 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 3.13: ON-delay timer relay	Item 3.12: ON-delay timer relay
Function display	Pointer for operating time			
Function diagram	FD 0008	FD 0033	FD 0011	FD 0040
Power supply circuit				
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	$0.8 - 1.1 \times U_N$			
Time circuit				
Time setting / number of time ranges	analog / 6			
Available time ranges	s. Tabelle „Time ranges“			
Recovery time	≤ 250 ms			
Minimum ON time	–	30 ms	–	–
Release value	$\geq 15\% U_N$			
Parallel loads permissible	yes			
Internal half-wave rectification	yes			
Error (average related to the full scale value)	during standard operation: Setting range > 6 s; $\pm 1.5\%$ Setting range 6 s; $\pm 2\%$ Setting range 3 s; $\pm 3\%$			
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	$\pm 0.3\%$ related to the full scale value			
Output circuit				
Contact assignment	1 timed and 1 instantaneous change over contact	1 timed and 1 instantaneous change over contact	2 timed change-over	timed and 1 instantaneous NC, 1 timed and 1 instantaneous NO
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	3×10^6 switching cycles or 10^4 motor operation hours			
Response time	≤ 25 ms			
Release time	≤ 60 ms			
General information				
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 250 V			
Test voltage U_{eff} 50 Hz according to DIN VDE 0110-1, table A.1	2.21 kV			
Protection degree housing/terminals according to DIN VDE 0470 sec. 1:11.92	IP 30/IP 20			
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	S 3-9			
Circuit diagram	KS 5102/3	KS 5102/3	KS 5153/2	KS 5155/2
Weight	0.35 kg			
Accessories	Z 29			
Approvals	