



Mechanical Cam Programmings

SPA 1, SPA 2 for single voltage

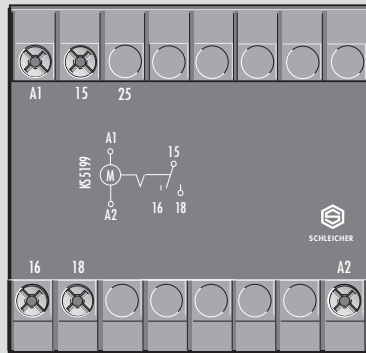
Function: mechanical cam programmer

Factory preset program

Contact equipment: SPA 1 = 1 changeover

SPA 2 = 2 changeover

SPA 1



Function

The mechanical cam programmers are equipped with a synchronous motor which, through a gear box, drives the axes with the switch cams. The switch cams actuate the spring contacts which are designed as changeover contacts. Cycle times (axes rotation times) from 8 s to 48 h (at 50 Hz) are available by using different gear boxes. In the standard version, the switch cams are divided once (180°/180°). The following switch cams are available: 2 up to 8 equally divided, and 1 up to 4 variably divided (not under 1,4,4°). The shortest selectable closing or opening time is 4 %.

The necessary cycle time and program setting of the switch cams are factory preset and have to be indicated on the customers order.

1

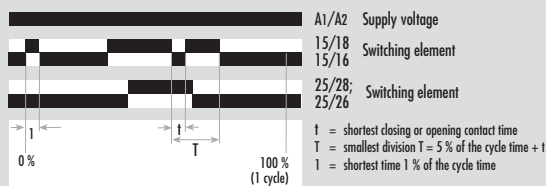
Product Description

The mechanical cam programmers SPA 1 and SPA 2 are available with the following cycle times and standard switch cams:

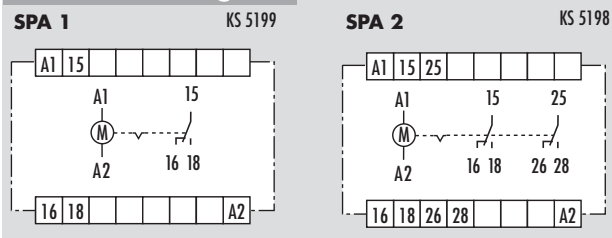
Function Diagram

FD 5009 W1

SPA 2

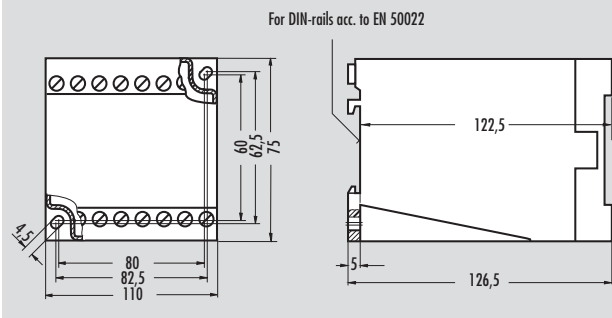


Connection Diagram



Dimensions

S 5-3



Cycle Time			
at 50 Hz		at 60 Hz	
8 s	15 min	6,66 s	750 s
10 s	20 min	8,33 s	1000 s
12 s	25 min	10 s	1250 s
15 s	30 min	12,5 s	1500 s
20 s	40 min	16,66 s	2000 s
25 s	50 min	20,83 s	2500 s
30 s	60 min	25 s	3000 s
40 s	75 min	33,33 s	3750 s
50 s	90 min	41,66 s	75 min
60 s	2 h	50 s	100 min
75 s	3 h	62,5 s	150 min
90 s	4 h	75 s	200 min
120 s	5 h	100 s	250 min
150 s	6 h	125 s	300 min
3 min	8 h	150 s	400 min
4 min	10 h	200 s	500 min
5 min	12 h	250 s	600 min
6 min	15 h	300 s	750 min
8 min	20 h	400 s	1000 min
10 min	24 h	500 s	20 h
12 min	48 h	600 s	40 h

Type	50 Hz	60 Hz	Standard voltage	Special-voltage	Price Code
SPA 1	8 s to 25 min	6,66 s to 1250 min	24 V AC 125 to 127 V AC 230 V AC 50 or 60 Hz	42 V AC 48 V AC 120 V AC 400 V AC 50 or 60 Hz	S 1/69.1
SPA 1	30 min to 3 h	25 min to 150 min			S 1/69.2
SPA 1	4 h	200 min			S 1/69.3
SPA 1	5 h	250 min			S 1/69.4
SPA 1	6 h to 10 h	300 min to 500 min			S 1/69.5

Continued on the next page



Item Description

Type	50 Hz	60 Hz	Standard voltage	Special-voltage	Price Code
SPA 1	12 h to 24 h	10 h 20 h	24 V AC 125 to 127 V AC 230 V AC 50 or 60 Hz	42 V AC 48 V AC 120 V AC 400 V AC 50 or 60 Hz	S 1/69.6
SPA 1	48 h	40 h			S 1/69.7
SPA 2	8 s to 25 min	6,66 s 1250 min	24 V AC 125 to 127 V AC 230 V AC 50 or 60 Hz	42 V AC 48 V AC 120 V AC 400 V AC 50 or 60 Hz	S 1/69.8
SPA 2	30 min to 3 h	25 min 150 min			S 1/69.9
SPA 2	4 h	200 min			S 1/69.10
SPA 2	5 h	250 min			S 1/69.11
SPA 2	6 h to 10 h	300 min 500 min			S 1/69.12
SPA 2	12 h to 24 h	10 h 20 h			S 1/69.13
SPA 2	48 h	40 h			S 1/69.14

Additional charges for:

a.) 2 to 8 equally divided switch cams

S 1/69.15

b.) various divided switch cams

S 1/69.16



TECHNICAL DATA

FUNCTION according to DIN VDE 0435 Part 1 110:04.89

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 frequency Hz
Operating voltage range

Program Circuit

Cycle times
Shortest closing or opening contact time with standard switch cams within the cycle %
Shortest closing or opening contact time, smallest division for special switch cams related to the cycle
Release value % U_N
Permissible parallel load
Internal rectifier
Switching point tolerance related to the cycle time %
Tolerance of the closing or opening contact time related to the cycle time %

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 400
Test voltage U_{eff} 50 Hz acc. to DIN VDE 0110-1, Table A.1 kV 2,7
Protection class housing/terminals acc. to DIN VDE 0470 Sec. 1:11.92
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 5-3
Connection diagram KS 5198/2
Weight kg 0,4
Approvals page i.4

GENERAL TECHNICAL SPECIFICATIONS

SPA 1

Mechanical cam programmer
for single voltage
Cam programmer

-
FD 5009 W1

24	42	48	125-127	230	400
ca. 1,3				2,3	
ca. 1,1				2,2	
50 or 60					
0,8 to 1,1 x U_N					

see chart at page S 1/69

4

see FD 5009 W1

-

yes

-

± 0,25

± 0,5

1 changeover
Ag Cu
Ag Pd 70/30* or Au Ni 5*
400/400
5
AC-15 U_e 230 V AC, I_e 2 A
DC-13 U_e 24 V DC, I_e 2 A
-
5 x 10⁶, max. 2 x 10⁴ duty hours
-
-

5
III
3 outside, 2 inside
400
2,7
IP 30/IP 20
EN 50081-1:03.93, -2:03.94
EN 50082-2:1995

-10 to +55
S 5-3
KS 5198/2
0,4
page i.4

page i.5

*) Price: upon request

SPA 2

Mechanical cam programmer
for single voltage
Cam programmer

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FD 5009 W1

24	42	48	125-127	230	400
ca. 1,3				2,3	
ca. 1,1				2,2	
50 or 60					
0,8 to 1,1 x U_N					

see chart at page S 1/69

4

see FD 5009 W1

-

yes

-

± 0,25

± 0,5

2 changeover
Ag Cu
Ag Pd 70/30* or Au Ni 5*
400/400
5
AC-15 U_e 230 V AC, I_e 2 A
DC-13 U_e 24 V DC, I_e 2 A
-
5 x 10⁶, max. 2 x 10⁴ duty hours
-
-

5
III
3 outside, 2 inside
400
2,7
IP 30/IP 20
EN 50081-1:03.93, -2:03.94
EN 50082-2:1995

-10 to +55
S 5-3
KS 5198/2
0,4
page i.4

page i.5

*) Price: upon request

