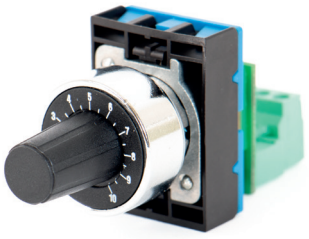
# SP-01

## Potentiometer | 100 kΩ | 1 MΩ | 0.2 W



**General data**

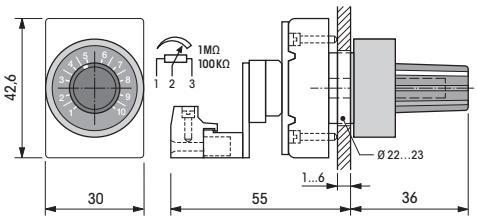
| | |
|---|---|
| Ambient temperature storage | -40 … 85 °C |
| Ambient temperature operation | -25 … 60 °C |
| Conductor cross section | 2.5 $mm^2$ |
| Nominal screw torque | 0.5 Nm |
| Module width | fig. 1 |
| Weight | 85 g |
| Protection degree | IP 65 |

**Product references**

| Types | Product reference | 100k | 1M |
|---|---|---|---|
| Potentiometer | SP-01/ | ✓ | ✓ |

*"..." list resistance to complete product references.*

**fig. 1. Dimensions (mm)**



# Time functions

## Delay functions

**E** **On delay**


S ⇒ R on with delay
SOFF ⇒ R off

**A** **Off delay**


S ⇒ R on
SOFF ⇒ R off with delay

**F** **On and off delay**


S ⇒ R on with delay (t1)
SOFF ⇒ R off with delay (t2)

## Puls shaping

**K** **Puls shaping**


S (pulse or continuous contact)
⇒ R on for t
S ‒ ‒ no influence on R and t

**L** **Pulse shaping,** retrigger (subsequ.time operation from 0)

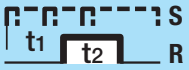

S (pulse or continuous contact)
⇒ R on for t
S on for t = tRESET

**M** **Puls shaping**


SOFF ⇒ R on for t
S ‒ ‒ no influence on R and t

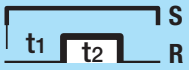
## Delayed pulse

**G** **On delay single shot**




S (pulse or continuous contact)
⇒ R after t1 on for t2
S ‒ ‒ no influence on R and t

**H** **On delay single shot**




S ⇒ R after t1 on for t2
SOFF ⇒ R off

## Special functions

**Y** **Star-delta timer**


S ⇒ ⅄ on for t⅄
⅄OFF ⇒ △ on with delay for t⅄-△
SOFF ⇒ △ off

**X1** **Restart delay**


S ⇒ R on
SOFF ⇒ R off and starts t
S ⇒ R restart only after t

## Shot timing modes

**W** **One shot leading edge**


S ⇒ R on for t
SOFF ⇒ R off
(pulse clipping)

**N** **One shot trailing edge**


SOFF ⇒ R on for t
S on for t ⇒ R off

**Q** **One shot leading and trailing edge**


S ⇒ R on for t1
SOFF ⇒ R on for t2
SOFF off for t1 ⇒ R off

## Blinker functions

**B** **Blinker,** pulse start


S ⇒ R on/off periodically
according to t
SOFF ⇒ R off

**B1** **Blinker,** pulse start, trailing pulse

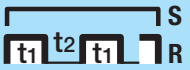

S ⇒ R on/off periodically
according to t
SOFF: last pulse = t

**B2** **Blinker,** interval start


S ⇒ R after t on/off periodically
according to t
SOFF ⇒ R off

## Repeat cycle timer

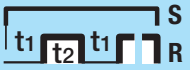
**I** **Repeat cycle timer,** pulse start




S ⇒ R on/off periodically
according to t1 and t2
SOFF ⇒ R off

**P** **Repeat cycle timer,** interval start

C55, CT1: t2/t1




S ⇒ R after t1 (t2) on/off periodically according to t2 and t1
SOFF ⇒ R off

## Special functions

**S** **Step-on / Step-off switch**


S ⇒ R on/off

**LS** **Step-switching** (staircase lighting timer), with time lapse


S ⇒ R on and starts t
S on for t ⇒ R off

## Stop / Reset

**t STOP** SSTOP interrupts t (t-addition)

**t RESET** SRESET reset t
t restarts immediately

**T** t is stopped ⇒ R on/off

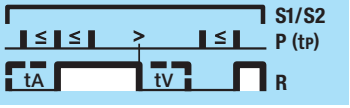
**T** Test

S = Triggering
R = Output circuit
⇒ = switches…

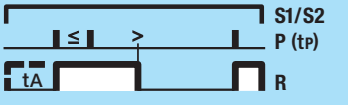
ON OFF

## Pulse sequence monitoring

**U**




**V**




S1/S2 = Monitoring start
P = Pulse sequence
tP = Pulse separation

≤: Pulse separation is **smaller** than the time tP
>: Pulse separation is **larger** than the time tP

Start with S1 = **without** start-up short-out tA
Start with S2 = start-up short-out tA

tV = settable alarm delay
delay (tA = tV)

## Time Cubes

| Type | Function | | | | | | | | | | | | | | | | | | | | t-Stop | t-Reset | Ext. Poti | t max. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E | A | F | W | N | Q | K | L | M | B | B1 | B2 | G | H | I | P | S | LS | X1 | U | V | | | | sec | min | h | d | Page |
| CT..-E 30 | ● | | | | | | | | | | | | | | | | | | | | | | | | | 30 | | | 203 |
| CT..-A 30 | | ● | | | | | | | | | | | | | | | | | | | | | | | | 30 | | | 203 |
| CT..-K 30 | | | | ● | | | ● | | | | | | | | | | | | | | | | | | | 30 | | | 203 |
| CT..-B 30 | | | | | | | | | | ● | | | | | | | | | | | | | | | | 30 | | | 203 |

## Modular plug-in Time Relays (CT-System)

| Type | Function | | | | | | | | | | | | | | | | | | | | t-Stop | t-Reset | Ext. Poti | t max. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E | A | F | W | N | Q | K | L | M | B | B1 | B2 | G | H | I | P | S | LS | X1 | U | V | | | | sec | min | h | d | Page |
| CT32… | ● | ● | | ● | ● | | ● | | | ● | ● | | | | | | | | | | | | | | | 60* | | | 209 |
| CT33… | ● | ● | △ | ● | ● | △ | ● | ● | | ● | ● | | ▲ | ▲ | | | | | | | | | | | | | 60* | | 210 |
| CT36… | | | | | | | | | | | | | | | ● | ● | | | | | | | | | | | 60* | | 211 |

## Plug-in Time Relays

| Type | Function | | | | | | | | | | | | | | | | | | | | t-Stop | t-Reset | Ext. Poti | t max. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E | A | F | W | N | Q | K | L | M | B | B1 | B2 | G | H | I | P | S | LS | X1 | U | V | | | | sec | min | h | d | Page |
| C55 | ● | ● | ● | ● | ● | ● | ● | | ● | ● | | | ● | ● | ● | ● | | | | ● | ● | ● | ● | | | | | 60 | 186 |
| C55.3 | ● | ● | ● | ● | ● | ● | ● | | ● | ● | | | ● | ● | ● | ● | | | | ● | ● | ● | ● | | | | | 60 | 187 |
| C55.4 | ● | ● | ● | ● | ● | ● | ● | | ● | ● | | | ● | ● | ● | ● | | | | ● | ● | ● | ● | | | | | 60 | 188 |
| C56 | ● | ● | ● | ● | ● | ● | ● | | ● | ● | | | ● | ● | ● | ● | | | | ● | ● | ● | ● | | | | | 60 | 189 |
| C64 | | ■ | | | ■ | | | | | | | | | | | | | | | | | | | | | 20 | | | 190 |
| CS2 | ● | ● | | ● | ● | | ● | | | ● | | ● | | | | | | | | | | | ● | | | 60* | | | 193 |
| CS3 | ● | ● | | ● | ● | | ● | | | ● | | ● | | | | | | | | | | | | | | 60* | | | 194 |

## Plug-in Time Relays

| Type | Function | | | | | | | | | | | | | | | | | | | | t-Stop | t-Reset | Ext. Poti | t max. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E | A | F | W | N | Q | K | L | M | B | B1 | B2 | G | H | I | P | S | LS | X1 | U | V | | | | sec | min | h | d | Page |
| C83 | ● | ● | △ | ● | ● | △ | ● | ● | | ● | ● | | ▲ | ▲ | | | | | | | | | | | | | 60* | | | 191 |
| C85 | | | ● | | | ● | | | | | | | ● | ● | ● | ● | | | | | | | | | | | 60* | | | 192 |

## DIN Time Relays

| Type | Function | | | | | | | | | | | | | | | | | | | | t-Stop | t-Reset | Ext. Poti | t max. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | E | A | F | W | N | Q | K | L | M | B | B1 | B2 | G | H | I | P | S | LS | Y | U | V | | | | sec | min | h | d | Page |
| AA2 - AA2M | | ● | | | | | | | | | | | | | | | | | | | | | | | | 1,5/12 | | | 154 |
| AE2 - AE2M | ● | | | | | | | | | | | | | | | | | | | | | | | | | 1,5/12 | | | 155 |
| AL1 | | | | | | | | ● | | | | | | | | | | | | | | | | | | | | | 170 |
| AL3 | | | | | | | | ● | | | | | | | | | ● | ● | | | | | | | | 60 | | | 171 |
| AL4 | | | | | | | | ● | | | | | | | | | ● | ● | | | | | | | | 60 | | | 172 |
| AL5 | | | | | | | | | | | | | | | | | ● | | | | | | | | | | | | 173 |
| AM1 | ● | | | ● | | | | | | ● | | ● | | | | | | | | | | | | | | 60 | | | 174 |
| AM2 | ● | ● | | ● | | | ● | | | | | | | | | | | | | | | | | | | 60 | | | 175 |
| AM3 [1] | ● | ● | | ● | | | ● | | | | | | | | | | | | | | | | | | | 60 | | | 176 |
| CM2 | ● | ● | | ● | | | ● | | | | | | | | | | | | | | | ● | ● | ● | | | 12 | | 177 |
| CM3 | ● | ● | | ● | ● | | ● | | | ● | ● | | | | | | | | | | | | | | | | 60* | | 178 |
| CMD11 A | | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | 152 |
| CMD11 E | ● | | | | | | | | | | | | | | | | | | | | | | | | | | | | 153 |
| CIM1 | ● | ● | | ● | ● | | ● | | | ● | ● | | | | | | ● | ● | | | | | | | | | 60* | | 160 |
| CIM12 | ● | ● | | ● | ● | | ● | | | ● | ● | | | | | | ● | ● | | | | | | | | | 60* | | 161 |
| CIM13 | ● | ● | | ● | ● | | ● | | | ● | ● | | | | | | ● | ● | | | | | | | | | 60* | | 162 |
| CIM14 | ● | ● | | ● | ● | | ● | | | ● | ● | | | | | | ● | ● | | | | | | | | | 60* | | 163 |
| CIM2 | ● | ● | | | | | | ● | ● | | | ● | ● | ● | | | | | | | | | | | | | 60* | | 164 |
| CIM22 | ● | ● | | | | | | ● | ● | | | ● | ● | ● | | | | | | | | | | | | | 60* | | 165 |
| CIM23 | ● | ● | | | | | | ● | ● | | | ● | ● | ● | | | | | | | | | | | | | 60* | | 166 |
| CIM3 | | | ● | | | ● | | | | | | | ● | ● | ● | ● | | | | | | | | | | | 60* | | 167 |
| CIM32 | | | ● | | | ● | | | | | | | ● | ● | ● | ● | | | | | | | | | | | 60* | | 168 |
| CIM33 | | | ● | | | ● | | | | | | | ● | ● | ● | ● | | | | | | | | | | | 60* | | 169 |
| CRV4 | ● | ● | △ | ● | ● | △ | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | | | | | | ● | | | 60* | | 180 |
| CSV4 | ● | ● | △ | ● | ● | △ | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | | | | | | ● | | | 10* | | 181 |
| CPF11 | | ● | | | | | ● | ● | | | | | | | | | | | | | | | | | 0.6 | | | | 179 |
| CY1 | | | | | | | | | | | | | | | | | | | ● | | | | | | | | | | 184 |

*** TF-60 Setting of long times**

The TF60 time setting methode permits short examination of long delay time settings. Elapsing times of hours can be monitored in the sec. range.

**Example for a delay time of 38h:**

1. Set range switch to 60sec
2. Set 38sec on the potentiometer (e.g. check 38sec by chronometer)
3. Set range switch to 60h

The delay time now amounts to 38h.

[1] alternatively with instantaneous contact
■ without auxiliary voltage (relay bistable)
□ without auxiliary voltage (relay monostable)
△ t2 = t1
▲ t2 = 0.5s