

# Electronic timer CT-APS.22

## OFF-delayed with 2 c/o (SPDT) contacts

The CT-APS.22 is an electronic timer from the CT-S range with OFF-delay and 10 time ranges. All electronic timers from the CT-S range are available with two different terminal versions. You can choose between the proven screw connection technology (double-chamber cage connection terminals) and the completely tool-free Easy Connect Technology (push-in terminals).



### Characteristics

- Rated control supply voltage 24-48 V DC, 24-240 V AC
- OFF-delay (with auxiliary voltage)
- 10 time ranges (0.05 s - 300 h)
- Control input with voltage-related triggering to start timing
- Precise adjustment by front-face operating controls
- Screw connection technology or Easy Connect Technology available
- Housing material for highest fire protection classification UL 94 V-0
- Tool-free mounting on DIN rail as well as demounting
- 2 c/o (SPDT) contacts
- Width of 22.5 mm
- 2 LEDs for the indication of operational states

### Approvals

- UL 508, CAN/CSA C22.2 No.14
- GL
- EAC
- CCC
- RMRS

### Marks

- CE
- RCM

### Order data

#### Electronic timers

Type	Rated control supply voltage	Connection technology	Time ranges	Order code
CT-APS.22P	24-48 V DC, 24-240 V AC	Push-in terminals	0.05 s - 300 h	1SVR 740 180 R3300
CT-APS.22S	24-48 V DC, 24-240 V AC	Screw type terminals	0.05 s - 300 h	1SVR 730 180 R3300

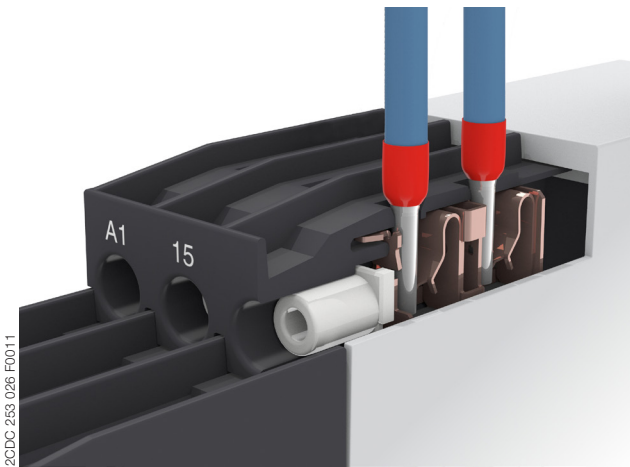
#### Accessories

Type	Description	Order code
ADP.01	Adapter for screw mounting	1SVR 430 029 R0100
MAR.01	Marker label for devices without DIP switches	1SVR 366 017 R0100
COV.11	Sealable transparent cover	1SVR 730 005 R0100

## Connection technology

### Maintenance free Easy Connect Technology with push-in terminals

Type designation CT-xxS.yyP

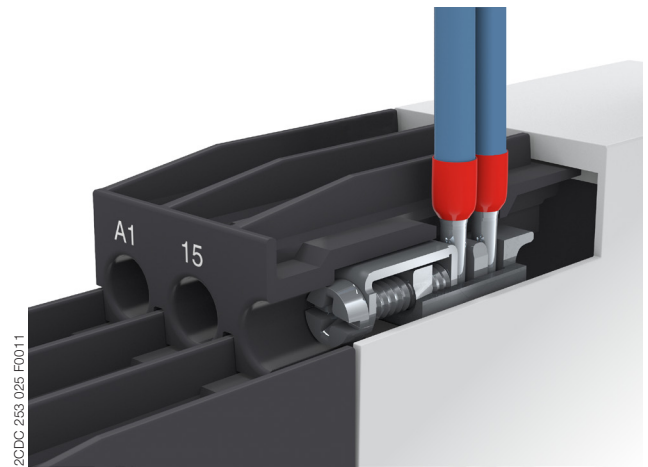


#### Push-in terminals

- Tool-free connection of rigid and flexible wires with wire end ferrule
- Easy connection of flexible wires without wire end ferrule by opening the terminals
- No retightening necessary
- One operation lever for opening both connection terminals
- For triggering the lever and disconnecting of wires you can use the same tool (Screwdriver according to DIN ISO 2380-1 Form A 0.8 x 4 mm (0.0315 x 0.157 in), DIN ISO 8764-1 PZ1 ø 4.5 mm (0.177 in))
- Constant spring force on terminal point independent of the applied wire type, wire size or ambient conditions (e. g. vibrations or temperature changes)
- Opening for testing the electrical contacting
- Gas-tight

### Approved screw connection technology with double-chamber cage connection terminals

Type designation CT-xxS.yyS



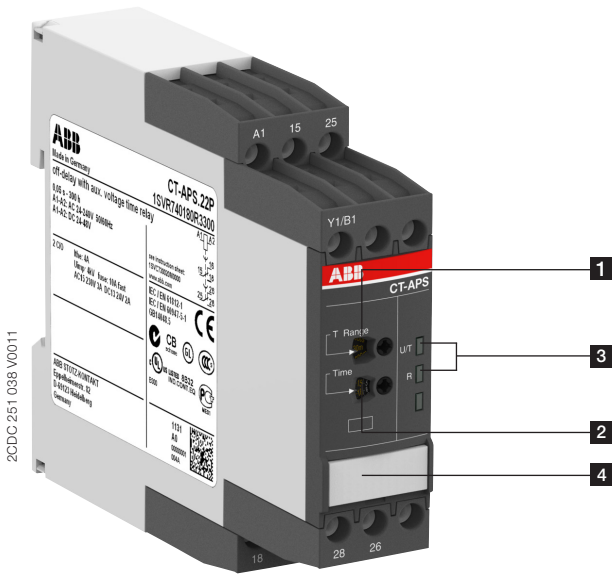
#### Double-chamber cage connection terminals

- Terminal spaces for different wire sizes
- One screw for opening and closing of both cages
- Pozidrive screws for pan- or crosshead screwdrivers according to DIN ISO 2380-1 Form A 0.8 x 4 mm (0.0315 x 0.157 in), DIN ISO 8764-1 PZ1 ø 4.5 mm (0.177 in)

Both the Easy Connect Technology with push-in terminals and screw connection technology with double-chamber cage connection terminals have the same connection geometry as well as terminal position.

Functions

Operating controls



- 1 Rotary switch for the preselection of the time range
- 2 Fine adjustment of the time delay
- 3 Indication of operational states  
U/T: green LED - control supply voltage / timing  
R: yellow LED - status of output relays
- 4 Marker label

Application

The CT-S range timers are designed for use in industrial applications. They operate over an universal range of supply voltages and a large time delay range, within compact dimensions. The easy-to-set front-face potentiometers, with direct reading scales, provide accurate time delay adjustment.

Operating mode

The CT-APS.22 with 2 c/o (SPDT) contacts offers 10 time ranges, from 0.05 s to 300 h, for the adjustment of the time delay. The time delay range is rotary switch selectable. The fine adjustment of the time delay is made via an internal potentiometer, with a direct reading scale, on the front of the unit. Timing is displayed by a flashing green LED labelled U/T.

Function diagram

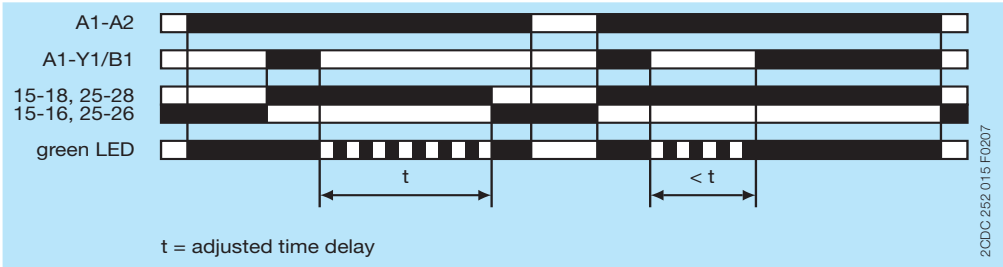
OFF-delay with auxiliary voltage

This function requires continuous control supply voltage for timing.

If control input A1-Y1/B1 is closed, the output relays energize immediately. If control input A1-Y1/B1 is opened, the time delay starts. The green LED flashes during timing. When the selected time delay is complete, the output relays de-energize and the flashing green LED turns steady.

If control input A1-Y1/B1 recloses before the time delay is complete, the time delay is reset and the output relays do not change state. Timing starts again when control input A1-Y1/B1 re-opens.

If control supply voltage is interrupted, the output relays de-energize and the time delay is reset.



Electrical connection

A1	15	25
Y1/B1		

28	26	
18	16	A2

15-16/18 1st c/o (SPDT) contact

25-26/28 2nd c/o (SPDT) contact

A1-A2 Rated control supply voltage  $U_s$  24-48 V DC or 24-240 V AC

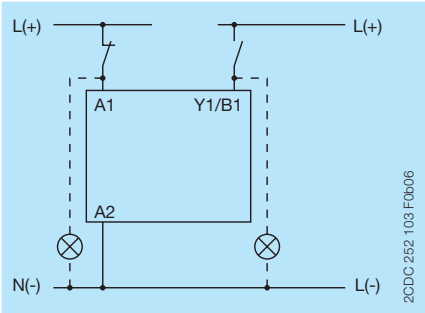
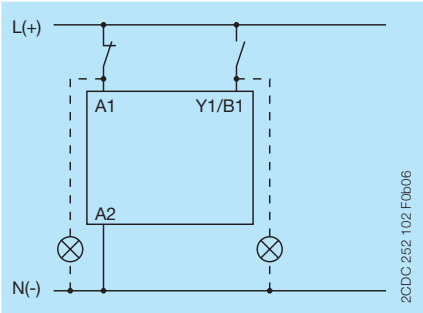
A1-Y1/B1 Control input

Connection diagram

Wiring instructions

Control input (voltage-related triggering)

The control input Y1/B1 is triggered with electric potential against A2. It is possible to use the control supply voltage from terminal A1 or any other voltage within the rated control supply voltage range.






## Technical data

Data at  $T_a = 25\text{ °C}$  and rated values, unless otherwise indicated

### Input circuits

Supply circuit		A1-A2		
Rated control supply voltage $U_s$		24-48 V DC, 24-240 V AC		
Rated control supply voltage $U_s$ tolerance	24-48 V DC	-15...+10 %		
	24-240 V AC	-15...+10 %		
Rated frequency	DC	n/a		
	AC	50/60 Hz		
Frequency range	AC	47-63 Hz		
Typical current / power consumption		24 V DC	230 V AC	115 V AC
	24-48 V DC	16 mA / 0.4 W	- / -	- / -
	24-240 V AC	- / -	60 mA / 14 VA	36 mA / 4.5 VA
Power failure buffering time	24 V DC	min. 15 ms		
	230 V AC	min. 20 ms		
Release voltage		> 10 % of the min. rated control supply voltage $U_s$		
Control circuit				
Control input, control function	A1-Y1/B1	start timing external		
Kind of triggering		voltage-related triggering		
Restistance to reverse polarity		yes		
Polarized		no		
Capable of switching a parallel load		yes		
Maximum cable length to the control inputs		50 m - 100 pF/m		
Minimum control pulse length		20 ms		
Control voltage potential		see rated control supply voltage $U_s$		
Current consumption of the control input	24 V DC	1.2 mA		
	230 V AC	8 mA		
Timing circuit				
Kind of timer	Single-function timer	OFF-delay with auxiliary voltage		
Time ranges 0.05 s - 300 h		0.05-1 s, 0.15-3 s, 0.5-10 s, 1.5-30 s, 5-100 s, 15-300 s, 1.5-30 min, 15-300 min, 1.5-30 h, 15-300 h		
Recovery time		< 80 ms		
Repeat accuracy (constant parameters)		$\Delta t < \pm 0.2\%$		
Accuracy within the rated control supply voltage tolerance		$\Delta t < 0.004\%/V$		
Accuracy within the temperature range		$\Delta t < 0.03\%/^{\circ}\text{C}$		
Setting accuracy of time delay		$\pm 6\%$ of full-scale value		

### User interface

Indication of operational states		
Control supply voltage / timing	U/T: green LED	 : control supply voltage applied
	U/T: green LED	 : timing
Relay status	R: yellow LED	 : output relays energized

## Output circuits

Kind of output	15-16/18	relay, 1st c/o (SPDT) contact
	25-26/28	relay, 2nd c/o (SPDT) contact
Contact material		Cd-free
Rated operational voltage $U_o$		250 V
Minimum switching voltage / Minimum switching current		12 V / 10 mA
Maximum switching voltage / Maximum switching current		see 'Load limit curves' on page 8
Rated operational current $I_o$	AC-12 (resistive) at 230 V	4 A
	AC-15 (inductive) at 230 V	3 A
	DC-12 (resistive) at 24 V	4 A
	DC-13 (inductive) at 24 V	2 A
AC rating (UL 508)	utilization category (Control Circuit Rating Code)	B 300
	max. rated operational voltage	300 V AC
	max. continuous thermal current at B 300	5 A
	max. making / breaking apparent power at B 300	3600/360 VA
Mechanical lifetime		30 x 10 <sup>6</sup> switching cycles
Electrical lifetime	AC-12, 230 V, 4 A	0.1 x 10 <sup>6</sup> switching cycles
Frequency of operation, with/without load		360/72000 h <sup>-1</sup>
Maximum fuse rating to achieve short-circuit protection	n/c contact	6 A fast-acting
	n/o contact	10 A fast-acting

## General data

MTBF		on request
Duty time		100 %
Dimensions (W x H x D)	product dimensions	22.5 x 85.6 x 103.7 mm (0.89 x 3.37 x 4.08 in)
	packaging dimensions	97 x 109 x 30 mm (3.82 x 4.29 x 1.18 in)
Weight		<b>Screw connection technology</b>
		<b>Easy Connect Technology (push-in)</b>
	net weight	0.138 kg (0.304 lb)
	gross weight	0.160 kg (0.353 lb)
Mounting		DIN rail (IEC/EN 60715), snap-on mounting without any tool
Mounting position		any
Minimum distance to other units	vertical	not necessary
	horizontal	not necessary
Material of housing		UL 94 V-0
Degree of protection	housing	IP50
	terminals	IP20

## Electrical connection

		<b>Screw connection technology</b>	<b>Easy Connect Technology (push-in)</b>
Connecting capacity	fine-strand with(out) wire end ferrule	1 x 0.5-2.5 mm <sup>2</sup> (1 x 18-14 AWG)	2 x 0.5-1.5 mm <sup>2</sup> (2 x 18-16 AWG)
		2 x 0.5-1.5 mm <sup>2</sup> (2 x 18-16 AWG)	
	rigid	1 x 0.5-4 mm <sup>2</sup> (1 x 20-12 AWG)	2 x 0.5-1.5 mm <sup>2</sup> (2 x 20-16 AWG)
		2 x 0.5-2.5 mm <sup>2</sup> (2 x 20-14 AWG)	
Stripping length		8 mm (0.32 in)	
Tightening torque		0.6 - 0.8 Nm (7.08 lb.in)	-

## Environmental data

Ambient temperature ranges	operation	-25...+60 °C
	storage	-40...+85 °C
Relative humidity range		25 % to 85 %
Vibration, sinusoidal (IEC/EN 60068-2-6)	functioning	40 m/s <sup>2</sup> , 10-58/60-150 Hz
	resistance	60 m/s <sup>2</sup> , 10-58/60-150 Hz, 20 cycles
Vibration, seismic (IEC/EN 60068-3-3)	functioning	20 m/s <sup>2</sup>
Shock, half-sine (IEC/EN 60068-2-27)	functioning	150 m/s <sup>2</sup> , 11 ms, 3 shocks/direction
	resistance	300 m/s <sup>2</sup> , 11 ms, 3 shocks/direction

## Isolation data

Rated insulation voltage $U_i$	input circuit / output circuit	500 V
	output circuit 1 / output circuit 2	300 V
Rated impulse withstand voltage $U_{imp}$ between all isolated circuits		4 kV; 1.2/50 $\mu$ s
Power-frequency withstand voltage between all isolated circuits (test voltage)		2.0 kV; 50 Hz, 1 min
Basic insulation (IEC/EN 61140)	input circuit / output circuit	500 V
Protective separation (IEC/EN 61140; EN 50178)	input circuit / output circuit	250 V
Pollution degree		3
Overvoltage category		III

## Standards / Directives

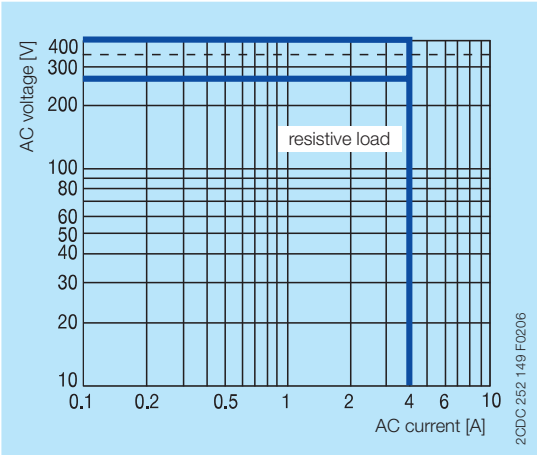
Standards	IEC/EN 61812-1
Low Voltage Directive	2014/35/EU
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

## Electromagnetic compatibility

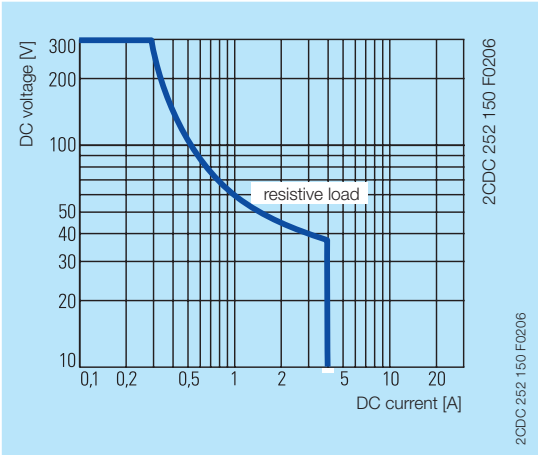
Interference immunity to		IEC/EN 61000-6-2
electrostatic discharge	IEC/EN 61000-4-2	Level 3, 6 kV / 8 kV
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3, 10 V/m (1 GHz) / 3 V/m (2 GHz) / 1 V/m (2.7 GHz)
electrical fast transient / burst	IEC/EN 61000-4-4	Level 3, 2 kV / 5 kHz
surge	IEC/EN 61000-4-5	Level 4, 2 kV A1-A2
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3, 10 V
harmonics and interharmonics	IEC/EN 61000-4-13	Class 3
Interference emission		IEC/EN 61000-6-3
high-frequency radiated	IEC/CISPR 22, EN 55022	Class B
high-frequency conducted	IEC/CISPR 22, EN 55022	Class B

Technical diagrams

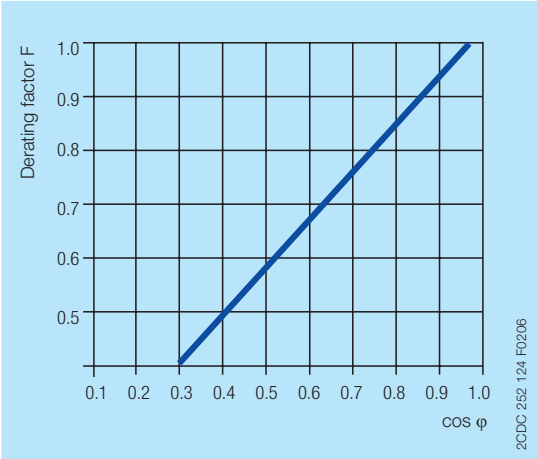
Load limit curves



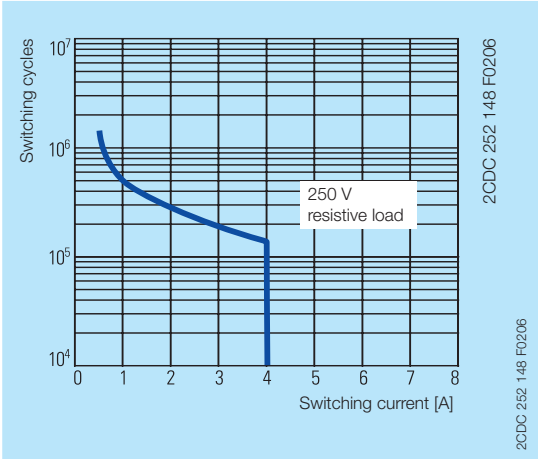
AC load (resistive)



DC load (resistive)



Derating factor F for inductive AC load

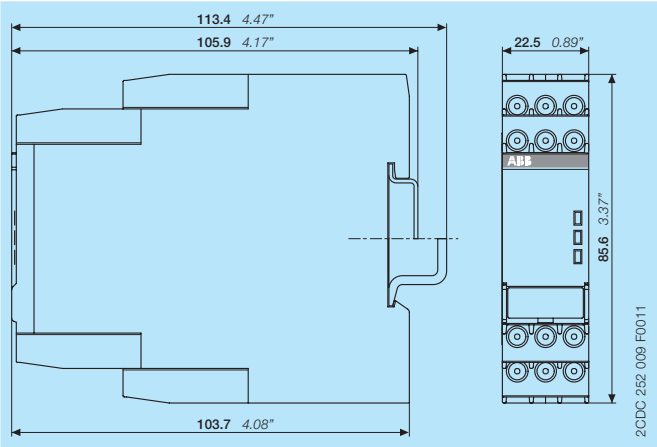


Contact lifetime



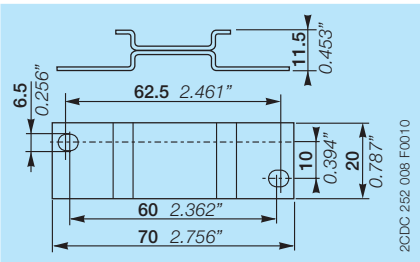
Dimensions

in mm and inches

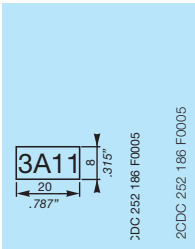


Accessories

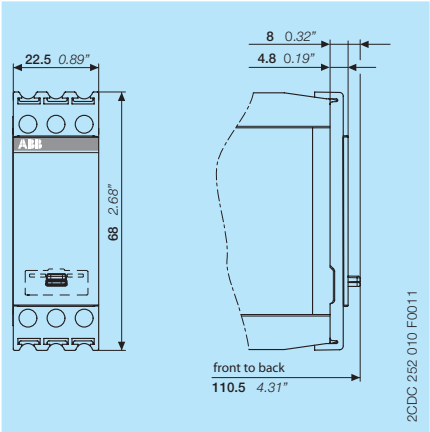
in mm and inches



ADP.01 - Adapter for screw mounting



MAR.01 - Marker label



COV.11 - Sealable transparent cover

Further documentation

Document title	Document type	Document number
Electronic Products and Relays	Technical catalogue	2CDC 110 004 C02xx
CT-APS, CT-ERS, CT-MVS, CT-SDS	Instruction manual	1SVC 730 020 M0000

You can find the documentation on the internet at [www.abb.com/lowvoltage](http://www.abb.com/lowvoltage)  
-> Automation, control and protection -> Electronic relays and controls -> Electronic timers.

CAD system files

You can find the CAD files for CAD systems at <http://abb-control-products.partcommunity.com>  
-> Low Voltage Products & Systems -> Control Products -> Electronic Relays and Controls.

# Contact us

## **ABB STOTZ-KONTAKT GmbH**

P. O. Box 10 16 80  
69006 Heidelberg, Germany  
Phone: +49 (0) 6221 7 01-0  
Fax: +49 (0) 6221 7 01-13 25  
E-mail: [info.desto@de.abb.com](mailto:info.desto@de.abb.com)

You can find the address of your  
local sales organization on the  
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