

CATALOG

Time relays

CT-C, CT-S, CT-D



- From economic to high end
- A reliable solution for every application
- World wide approvals and support

Available in three different ranges to cover every application, CT range time relays are used to provide reliable timing functions worldwide. They have proven their excellent functionality in daily use under the toughest conditions.

Choose ABB as the partner for all your low voltage timing control needs to leverage our wide variety of product options. From economic to high-end solutions – the range offers maximum value.



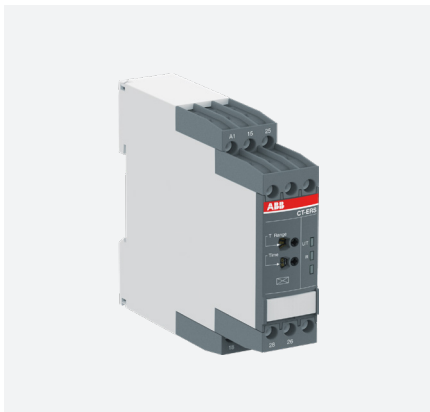
Time relays for industrial applications

Offer overview



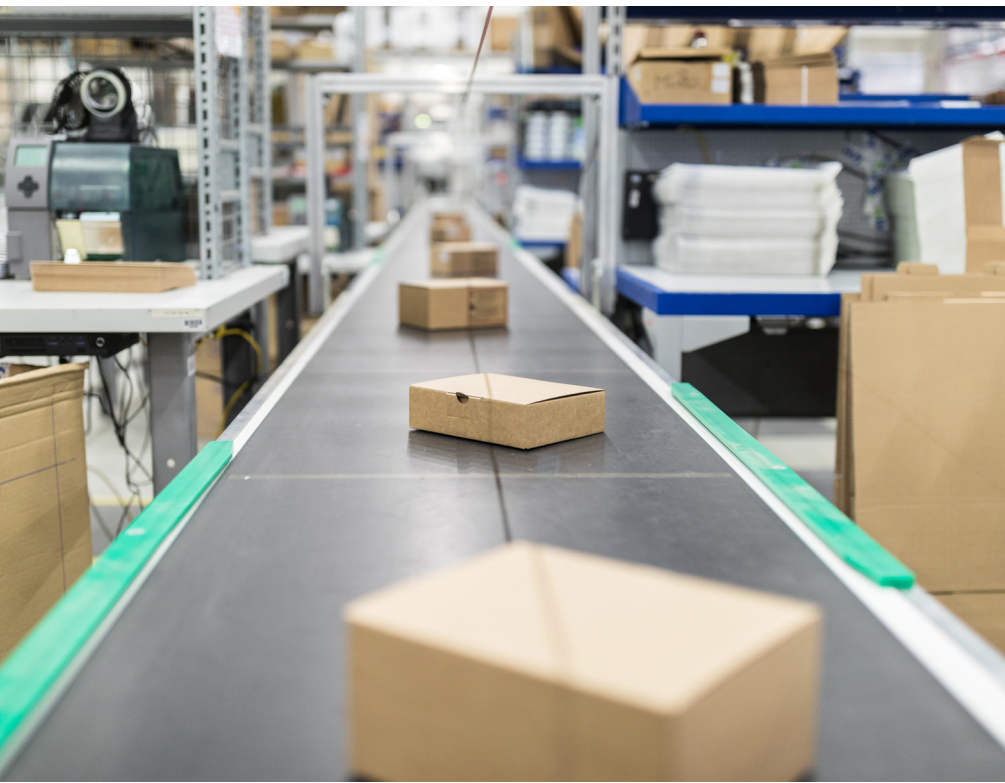
CT-C: the compact range

The CT-C range combines lower cost with higher value and performance by offering essential functions in a space-saving 17.5 mm housing. The range offers a choice of 11 devices, including single and multifunctional types, with timing functions that range from 0.05 seconds to 100 hours. Equipped with a wide voltage range, the CT-C range is suitable for a huge variety of applications worldwide.



CT-S: the high-performance range

The advanced CT-S range is ABB's universal range of electronic timers. It includes 22 single-function devices and 16 multifunction time relays, offering flexibility in operation with up to 13 functions. The devices feature seven or ten time ranges, adjustable from 0.05 seconds to 300 hours. Additionally, every device is available in two different connection technologies: familiar double-chamber cage connection terminals (screw terminals) and ABB's vibration-resistant Easy Connect technology (push-in terminals).



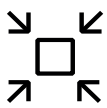


CT-C range

Benefits and advantages



The CT-C range combines lower cost with higher value and performance by offering essential functions in a 17.5 mm housing, freeing up room in any control cabinet. The range includes 11 devices, offering both single and multifunctional types, with a time range from 0.05 seconds to 100 hours. Equipped with wide voltage ranges, CT-C time relays allow for use across a huge variety of applications worldwide.



Space savings

With a width of just 17.5 mm, the CT-C range is 22% smaller than standard industrial housings for time relays. Its reduced overall footprint saves space in control cabinets. For more flexibility both 1 c/o and 2 c/o output versions are offered in the compact housing.



Cost effective solution

The CT-C range is an economical range that combines lower cost with higher value and performance. It suits basic applications where a time relay is needed, while offering improved functionality in each device.






Optimized logistics

By combining more functions into each device, the CT-C range makes it possible to reduce stock by up to 75% compared to other ranges. All devices in the CT-C range offer a wide supply voltage range as well as a wide time setting range from 0.05 seconds to 100 hours. This significantly reduces order code variance, making the range more compact with just 11 order codes covering every requirement.

CT-C range

Technical data

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

	CT-C with 1 c/o contact	CT-C with 2 c/o contacts	CT-MFC.21 CT-MKC.31
Input circuit - Supply circuit			
Rated control supply voltage U_s	24-240 V AC / 24-48 V DC		12-240 V AC/DC
Rated control supply voltage U_s tolerance	-15...+10 %		
Rated frequency	DC or 50/60 Hz		
Frequency range AC	47-63 Hz		
Typical power consumption	max. 3.5 VA		
Power failure buffering time	min. 20 ms		
Release voltage	> 10 % of the minimum rated control supply voltage U_s		
Minimum energizing time	100 ms (CT-ARC)		
Formatting time ¹⁾	5 min (CT-ARC)		
Input circuit - Control circuit			
Control input, control function	A1-Y1/B1	start timing external	
Kind of triggering	voltage-related triggering		
Resistance to reverse polarity	yes		
Parallel load / polarized	yes / 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		
Timing circuit			
Time ranges	7 time ranges 0.05 s - 100 h	1.) 0.05-1 s 2.) 0.5-10 s 3.) 5-100 s 4.) 0.5-10 min 5.) 5-100 min 6.) 0.5-10 h 7.) 5-100 h	
	4 time ranges 0.05 s - 10 min (CT-SDC, CT-SAC, CT-ARC)	1.) 0.05-1 s 2.) 0.5-10 s 3.) 5-100 s 4.) 0.5-10 min	
Recovery time	< 50 ms		
Accuracy within the rated control supply voltage tolerance	$\Delta t < 0.005\ % / V$		
Accuracy within the temperature range	$\Delta t < 0.06\ % / \text{°C}$		
Repeat accuracy (constant parameters)	$\Delta t < \pm 0.5\ %$		
Setting accuracy of time delay	$\pm 10\%$ of full-scale value		
Star-delta transition time	CT-SDC / CT-SAC	fixed 50 ms / adjustable: 20 ms, 30 ms, 40 ms, 50 ms, 60 ms, 80 ms or 100 ms	
Star-delta transition time tolerance	CT-SDC / CT-SAC	$\pm 3\ ms$	
Indication of operational states			
Control supply voltage / timing	U: green LED	 : control supply voltage applied  : timing	
Relay energized	R, R1, R2: yellow LED	 : output relay energized	
Operating elements and controls			
Adjustment of the time range	front-face rotary switch, direct reading scales		
Fine adjustment of the time value	front-face potentiometer		
Preselection of the timing function at multifunction devices	front-face rotary switch, direct reading scales		
Adjustment of the transition time	CT-SAC	front-face potentiometer	
¹⁾ Prior to first commissioning and after a six month stop of operation.			
Output circuit			

CT-C range

Technical data

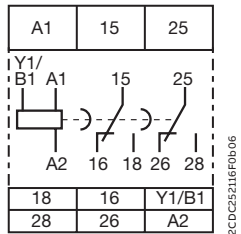
		CT-C with 1 c/o contact	CT-C with 2 c/o contacts	CT-MFC.21 CT-MKC.31
Environmental data				
Ambient temperature range	operation / storage	-20 ... +60 °C / -40 ... +85 °C		
Climatic class	IEC/EN 60068-2-30	3K3		
Relative humidity range		25-85%		
Vibration, sinusoidal	IEC/EN 60068-2-6	20 m/s ² ; 10 cycles, 10...150...10 Hz		
Shock (half-sine)	IEC/EN 60068-2-27	150 m/s ² , 11 ms		
Isolation data				
Rated insulation voltage U _i	input circuit / output circuit	300 V		
	output circuit 1 / output circuit 2	not available	300 V	300 V
Rated impulse withstand voltage U _{imp}	between all isolated circuits	4 kV; 1.2/50 μs		
Power-frequency withstand voltage test (test voltage)	between all isolated circuits	2.5 kV; 50 Hz; 60 s		
Basic insulation (IEC/EN 61140)	input circuit / output circuit	300 V		
Protective separation (pollution degree 2 / overvoltage category II)	input circuit / output circuit	250 V		
Pollution degree		3		
Overtoltage 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 incl. 2015/863/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)		
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 L-L)		
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	level 3 (10 V)		
Interference emission				
high-frequency radiated	IEC/CISPR 22, EN 55022	class B		
high-frequency conducted	IEC/CISPR 22, EN 55022	class B		

CT-C range

Technical diagrams

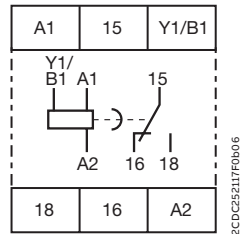
Connection diagrams

CT-AHC.22



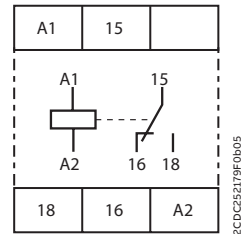
A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1st c/o contact
25-26/28	2nd c/o contact

CT-AHC.12



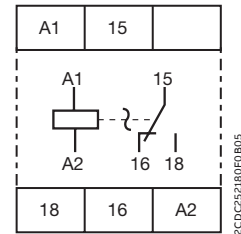
A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1st c/o contact

CT-VWC.12



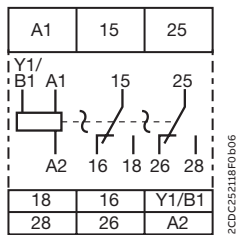
A1-A2	Supply: 24-48 V DC or 24-240 V AC
15-16/18	1st c/o contact

CT-EBC.12



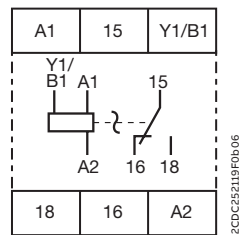
A1-A2	Supply: 24-48 V DC or 24-240 V AC
15-16/18	1st c/o contact

CT-TGC.22



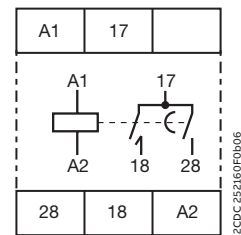
A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1st c/o contact
25-26/28	2nd c/o contact

CT-TGC.12



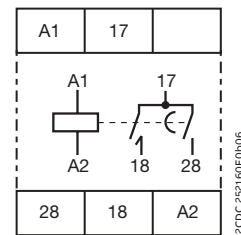
A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1st c/o contact

CT-SDC.22



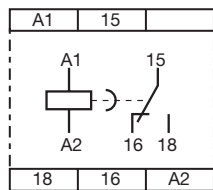
A1-A2	Supply: 24-48 V DC or 24-240 V AC
17-18	1st n/o contact (star contactor)
17-28	2nd n/o contact (delta contactor)

CT-SAC.22



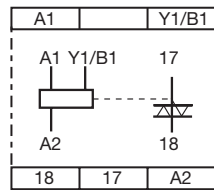
A1-A2	Supply: 24-48 V DC or 24-240 V AC
17-18	1st n/o contact (star contactor)
17-28	2nd n/o contact (delta contactor)

CT-ARC.12



A1-A2	Supply: 12-240 V AC/DC
15-16/18	1st c/o contact

CT-MKC.31



A1-A2	Supply: 12-240 V AC/DC
15-16/18	1st c/o contact



CT-S range

Benefits and advantages



The advanced CT-S range includes 22 single-function devices and 16 multifunction timers with up to 13 functions. The devices feature seven or ten time ranges, which are adjustable from 0.05 seconds to 300 hours. Every device is available in two different connection technologies: double-chamber cage connection terminals or ABB's vibration-resistant Push-in Technology.



Improve installation efficiency

The CT-S range allows simple tool free mounting and demounting on the DIN rail. Thanks to the easy connect and the double-chamber cage connection technology simplified wiring with or without wire end ferrules is no problem. Both allow simple and easy installation, even in case of different cable diameters.



Reliable in harsh conditions

The CT-S range's extended features make it especially suited for harsh environments. The housing material has the highest UL fire protection classification. All functions are available with Push-in terminals, making operations in environments with high vibrations possible without retightening. Additionally, the CT-S range offers devices with an extended temperature range, running operations in temperatures as low as -40 °C effortlessly. Specific types are tested according to the latest rail industry standards, making them a perfect solution for rolling stock and other rail applications.

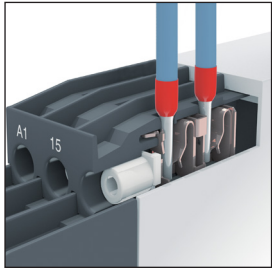


Global availability

Every device in the CT-S range is designed to provide a wide supply voltage range, making global differences irrelevant. Additionally, the CT-S range meets a broad range of standards and requirements. Together with ABB's global support and sales network, using CT-S gives customers the confidence of worldwide sourcing – no matter where they build, install or operate their equipment.

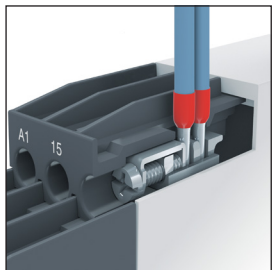
CT-S range

Benefits and advantages



2CDC253026P0011

01 Tool-free mounting of wires



2CDC253025F0011

02 Wiring of double-chamber cage connection terminals with screw driver

Easy Connect Technology

Tool-free wiring and excellent vibration resistance. Easy Connect (Push-in terminals) provide connection of wires up to $2 \times 0.5 - 1.5 \text{ mm}^2$ ($2 \times 20 - 16 \text{ AWG}$), rigid or fine-strand with or without wire end ferrules. The extended type designators for products with push-in terminals are indicated by a **P** following the extended type designator e.g. CT-xxS.xx**P**.

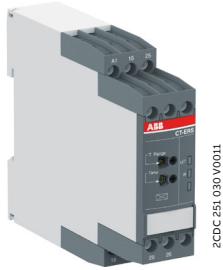
Double-chamber cage connection terminals

According to IEC/EN 60947-1 double-chamber cage connection terminals provide connection of wires up to $2 \times 0.5 - 2.5 \text{ mm}^2$ ($2 \times 20 - 14 \text{ AWG}$) rigid or fine-strand, with or without wire end ferrules. Thanks to the technology, using different cable diameters in one terminal is easy and simple to install. Potential distribution does not require additional terminals. The extended type designators for products with double-chamber cage connection terminals (screw terminals) are indicated by an **S** following the extended type designator, e.g. CT-xxS.xx**S**.

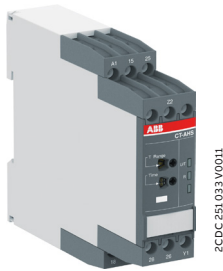


CT-S range

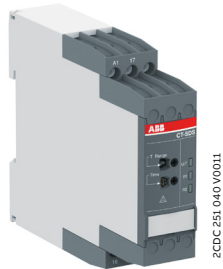
Ordering details - singlefunctional devices



CT-ERS.21P



CT-AHS.22P



CT-SDS.23P

- Control input with voltage-related triggering
- Control input with volt-free triggering
- /□ Two control inputs with volt-free triggering
- No triggering

Ordering details

Timing function	Rated control supply voltage	Time ranges	Control input	Output	Type	Order code	Weight (1 pc) kg (lb)
ON-delay	24-240 V AC/DC	10 (0.05 s - 300 h)	-	2 c/o	CT-ERS.21S ¹⁾	1SVR730100R0300	0.13 (0.287)
					CT-ERS.21P ¹⁾	1SVR740100R0300	0.121 (0.267)
	CT-ERS.22S			1SVR730100R3300	0.121 (0.267)		
	CT-ERS.22P			1SVR740100R3300	0.113 (0.249)		
	-		1 c/o	CT-ERS.12S	1SVR730100R3100	0.106 (0.234)	
				CT-ERS.12P	1SVR740100R3100	0.101 (0.222)	
OFF-delay	24-240 V AC/DC	10 (0.05 s - 300 h)	■	2 c/o	CT-APS.21S ¹⁾	1SVR730180R0300	0.146 (0.322)
					CT-APS.21P ¹⁾	1SVR740180R0300	0.125 (0.276)
	CT-APS.22S			1SVR730180R3300	0.138 (0.304)		
	CT-APS.22P			1SVR740180R3300	0.127 (0.28)		
	-		1 c/o	CT-APS.12S	1SVR730180R3100	0.109 (0.24)	
				CT-APS.12P	1SVR740180R3100	0.103 (0.227)	
24-48 V DC, 24-240 V AC	10 (0.05 s - 300 h)	□	2 c/o	CT-AHS.22S	1SVR730110R3300	0.136 (0.30)	
				CT-AHS.22P	1SVR740110R3300	0.125 (0.276)	
OFF-delay ²⁾	24-240 V AC/DC	7 (0.05 s - 10 min)	-	1 c/o	CT-ARS.11S	1SVR730120R3100	0.106 (0.234)
					CT-ARS.11P	1SVR740120R3100	0.10 (0.22)
			-	2 c/o	CT-ARS.21S	1SVR730120R3300	0.124 (0.273)
					CT-ARS.21P	1SVR740120R3300	0.115 (0.254)
Star-delta change-over ³⁾	24-48 V DC, 24-240 V AC	7 (0.05 s - 10 min)	-	2 n/o	CT-SDS.22S	1SVR730210R3300	0.114 (0.251)
					CT-SDS.22P	1SVR740210R3300	0.108 (0.238)
	CT-SDS.23S				1SVR730211R2300	0.118 (0.26)	
	CT-SDS.23P				1SVR740211R2300	0.112 (0.247)	
	380-440 V AC						

¹⁾ Extended temperature range -40 °C

²⁾ Without auxiliary voltage

³⁾ 50 ms transition time

S: Screw connection
P: Push-in / easy connect

CT-S range

Technical data

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

		CT-S
Input circuit - Supply circuit		
Rated control supply voltage U_s	CT-xxx.x1	24-240 V AC/DC
	CT-xxx.x2	24-48 V DC, 24-240 V AC
	CT-xxx.x3	380-440 V AC
Rated control supply voltage U_s tolerance		-15...+10 %
Rated frequency		DC or 50/60 Hz
Frequency range AC		47-63 Hz
Typical power consumption		max. 16 VA
Power failure buffering time	24 V DC	min. 15 ms
	230/400 V AC	min. 20 ms
Release voltage		> 10 % of the minimum rated control supply voltage U_s
Minimum energizing time		100 ms (CT-ARS)
Formatting time ¹⁾		5 min (CT-ARS)
Input circuit - Control circuit		
Kind of triggering	CT-MVS, CT-MXS, CT-APS	voltage-related triggering
Control input, Control function	A1-Y1/B1	start timing external
Parallel load / polarized		yes / no
Maximum cable length to the control input		50 m - 100 pF/m
Minimum control pulse length		20 ms
Control voltage potential		see rated control supply voltage
Current consumption of the control input	24 V DC	1.2 mA
	230 V AC	8 mA
	400 V AC	6 mA
Kind of triggering	CT-MFS, CT-MBS, CT-AHS	volt-free triggering
Control input, Control function	Y1-Z2	start timing external
	X1-Z2	pause timing / accumulative functions (CT-MFS)
Maximum switching current in the control circuit		1 mA
Maximum cable length to the control input		50 m - 100 pF/m
Minimum control pulse length		20 ms
No-load voltage at the control inputs		10-40 V DC
Remote potentiometer		
Remote potentiometer connections, resistance value	Z1-Z2	50 k Ω (CT-MFS, CT-MBS, CT-MVS.21, CT-MXS)
	Z3-Z2	50 k Ω (CT-MXS)
Maximum cable length to remote potentiometer		2 x 25 m, shielded with 100 pF/m
Shield connection		Z2
Timing circuit		
Time ranges	10 time ranges 0.05 s - 300 h	1.) 0.05-1 s 2.) 0.15-3 s 3.) 0.5-10 s 4.) 1.5-30 s 5.) 5-100 s 6.) 15-300 s 7.) 1.5-30 min 8.) 15-300 min 9.) 1.5-30 h 10.) 15-300 h
	7 time ranges 0.05 s - 10 min (CT-SDS, CT-ARS)	1.) 0.05-1 s 2.) 0.15-3 s 3.) 0.5-10 s 4.) 1.5-30 s 5.) 5-100 s 6.) 15-300 s 7.) 0.5-10 min
Recovery time	24-240 V AC/DC	< 50 ms
	24-48 V DC, 24-240 V AC	< 80 ms
	380-440 V AC	< 60 ms
Accuracy within the rated control supply voltage tolerance		$\Delta t < 0.004\text{ % / V}$
Accuracy within the temperature range		$\Delta t < 0.03\text{ % / °C}$
Repeat accuracy (constant parameters)		< $\pm 0.2\text{ %}$
Setting accuracy of time delay		$\pm 6\text{ %}$ of full-scale value
Star-delta transition time		fixed 50 ms (CT-SDS, CT-MBS, CT-MFS, CT-MVS.2x)
Star-delta transition time tolerance		$\pm 2\text{ ms}$

¹⁾ Prior to first commissioning and after a six-month stop in operation

CT-S range

Technical data

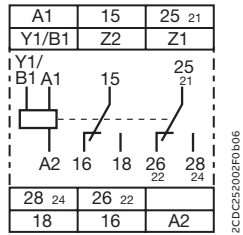
Environmental data		
Ambient temperature ranges	operation / storage	-25...+60 °C / -40...+85 °C, -40...+60 °C / -40...+85 °C for CT-MVS.21, CT-MFS.21, CT-ERS.21, CT-APS.21
Relative humidity range		25 % to 85 %
Vibration, sinusoidal (IEC/EN 60068-2-6)	functioning	40 m/s ² , 10-58/60-150 Hz
	resistance	60 m/s ² , 10-58/60-150 Hz, 20 cycles
Vibration, seismic (IEC/EN 60068-3-3)	functioning	20 m/s ²
Shock, half-sine (IEC/EN 60068-2-27)	functioning	150 m/s ² , 11 ms, 3 shocks/direction
	resistance	300 m/s ² , 11 ms, 3 shocks/direction
Isolation data		CT-S with 1 c/o
Rated insulation voltage U _i	input circuit / output circuit	500 V
	output circuit 1 / output circuit 2	not available
Rated impulse withstand voltage U _{imp}	between all isolated circuits	4 kV; 1.2/50 μs except devices CT-xxx.23: input / output: 6 kV; 1.2/50 μs output 1 / output 2: 4 kV; 1.2/50 μs
	between all isolated circuits	2.0 kV; 50 Hz; 60 s
Power-frequency withstand voltage (test voltage)	between all isolated circuits	2.0 kV; 50 Hz; 60 s
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

CT-S range

Technical diagrams

Connection diagrams

CT-MVS.21



A1-A2 Supply: 24-240 V AC/DC

A1-Y1/B1 Control input

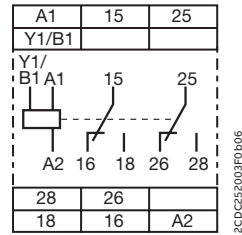
15-16/18 1st c/o contact

25-26/28 2nd c/o contact

21-22/24 2nd c/o contact as instantaneous contact

Z1-Z2 Remote potentiometer connection

CT-MVS.22



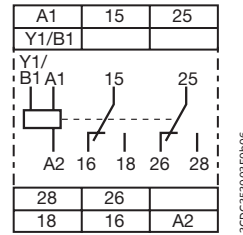
A1-A2 Supply: 224-48 V DC or 24-240 V AC

A1-Y1/B1 Control input

15-16/18 1st c/o contact

25-26/28 2nd c/o contact

CT-MVS.23



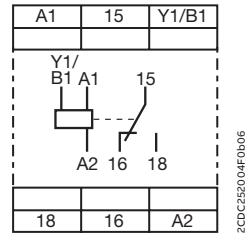
A1-A2 Supply: 380-440V AC

A1-Y1/B1 Control input

15-16/18 1st c/o contact

25-26/28 2nd c/o contact

CT-MVS.12

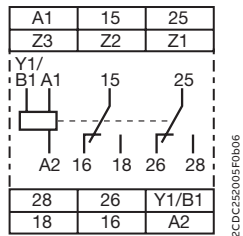


A1-A2 Supply: 24-48 V DC or 24-240 V AC

A1-Y1/B1 Control input

15-16/18 1st c/o contact

CT-MXS.22



A1-A2 Supply: 24-48 V DC or 24-240 V AC

A1-Y1/B1 Control input

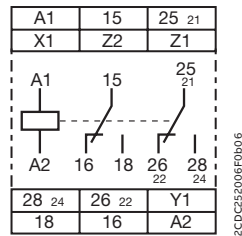
15-16/18 1st c/o contact

25-26/28 2nd c/o contact

Z1-Z2 Remote potentiometer connection

Z3-Z2 Remote potentiometer connection

CT-MFS.21



A1-A2 Supply: 24-240 V AC/DC

15-16/18 1st c/o contact

25-26/28 2nd c/o contact

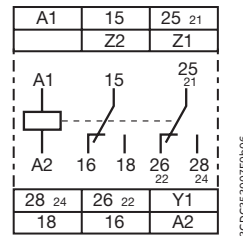
21-22/24 2nd c/o contact as instantaneous contact

Y1-Z2 Control input

X1-Z2 Control input

Z1-Z2 Remote potentiometer connection

CT-MBS.22



A1-A2 Supply: 24-48 V DC or 24-240 V AC

15-16/18 1st c/o contact

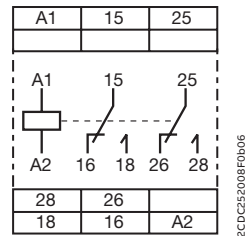
25-26/28 2nd c/o contact

21-22/24 2nd c/o contact as instantaneous contact

Y1-Z2 Control input

Z1-Z2 Remote potentiometer connection

CT-WBS.22



A1-A2 Supply: 24-48 V DC or 24-240 V AC

15-16/18 1st c/o contact

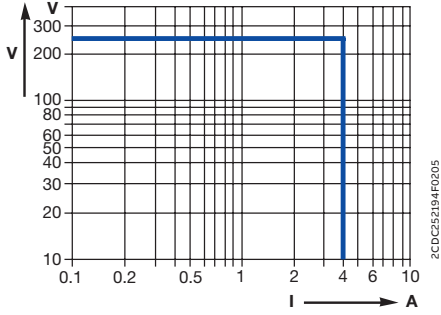
25-26/28 2nd c/o contact

CT-S range

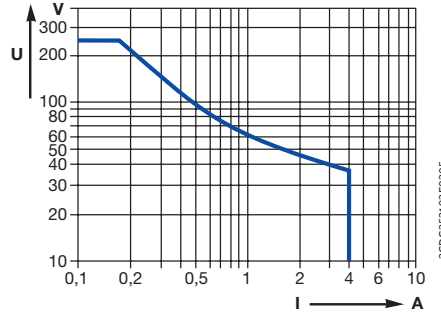
Technical diagrams

Load limit curves

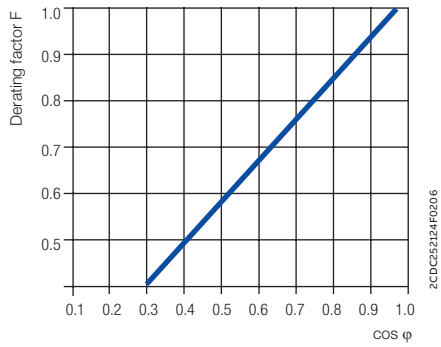
AC load (resistive)



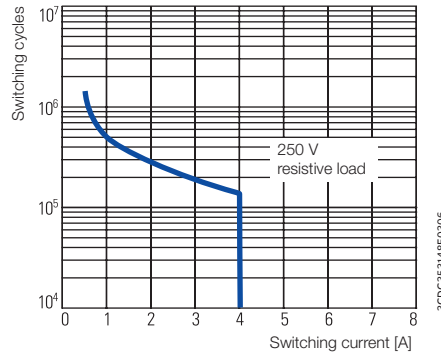
DC load (resistive)



Derating factor F for inductive AC load

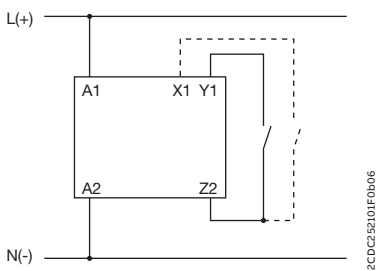


Contact lifetime

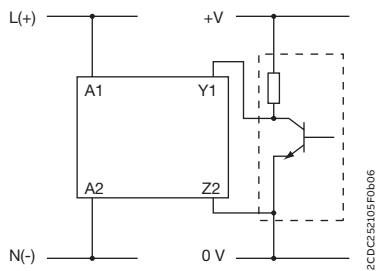


Wiring notes

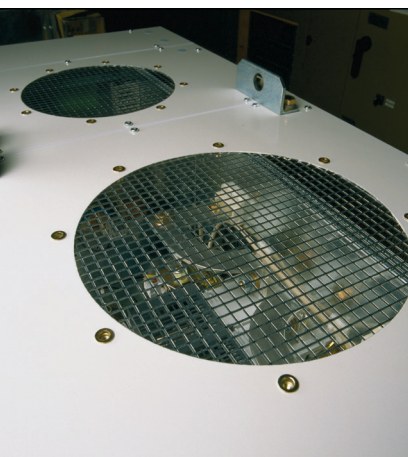
Control inputs (volt-free triggering)



Triggering of the control inputs (volt-free) with a proximity switch (3 wire)





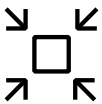


CT-D range

Benefits and advantages



The CT-D range is ideal for building applications and installation panels, due to its compact modular housing. For maximum flexibility in operation, nine single-function as well as two multifunction devices with seven timing functions are available. The devices offer four or seven time ranges from 0.05 seconds up to 100 hours. Their wide supply voltage range allows their use in applications worldwide.



Space savings

The CT-D range is ideal for installation panels thanks to its compact modular housing. The housing's design helps make the status and configuration more clearly visible. The CT-D range also offers a higher output current than standard industrial types. As well as the 1 c/o contacts, ABB offers devices with 2 c/o contacts for maximum flexibility.



Easy to install

Direct reading scales help make time setting quick and easy. A pre-selection for the time range together with an additional scale for fine adjustments help improve installation efficiency. For more flexibility, the delay time can even be changed when processes are running, making optimization to fit the application even simpler. All devices can be mounted and demounted tool-free.






Global availability

The CT-D range fulfills various global standards and approvals, supporting business worldwide. Additionally, all devices from the CT-D range have a wide supply voltage from 24-48 V DC and 24-240 V AC, making it ideal for the use in installation panels around the world.

CT-D range

Technical data

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

	CT-D with 1 c/o contact	CT-D with 2 c/o contacts	CT-MFD.21
Input circuit - Supply circuit			
Rated control supply voltage U_s	24-240 V AC / 24-48 V DC		12-240 V AC/DC
Rated control supply voltage U_s tolerance	-15...+10 %		
Rated frequency	DC or 50/60 Hz		
Frequency range AC	47-63 Hz		
Typical power consumption	max. 3.5 VA		
Power failure buffering time	min. 20 ms		
Release voltage	> 10 % of the minimum rated control supply voltage U_s		
Input circuit - Control circuit			
Control input, control function	A1-Y1/B1	start timing external	
Kind of triggering	voltage-related triggering		
Resistance to reverse polarity	yes		
Parallel load / polarized	yes / 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		
Current consumption of the control input	see data sheet		
Timing circuit			
Time ranges	7 time ranges 0.05 s - 100 h	1.) 0.05-1 s 2.) 0.5-10 s 3.) 5-100 s 4.) 0.5-10 min 5.) 5-100 min 6.) 0.5-10 h 7.) 5-100 h	
	4 time ranges 0.05 s - 10 min (CT-SDD, CT-SAD)	1.) 0.05-1 s 2.) 0.5-10 s 3.) 5-100 s 4.) 0.5-10 min	
Recovery time	< 50 ms		
Accuracy within the rated control supply voltage tolerance	$\Delta t < 0.005\%$ / V		
Accuracy within the temperature range	$\Delta t < 0.06\%$ / °C		
Repeat accuracy (constant parameters)	$\Delta t < \pm 0.5\%$		
Setting accuracy of time delay	$\pm 10\%$ of full-scale value		
Star-delta transition time	CT-SDD/ CT-SAD	fixed 50 ms / adjustable: 20 ms, 30 ms, 40 ms, 50 ms, 60 ms, 80 ms or 100 ms	
Star-delta transition time tolerance	CT-SDD / CT-SAD	± 3 ms	
Indication of operational states			
Control supply voltage / timing	U: green LED	 : control supply voltage applied  : timing	
Relay energized	R, R1, R2: yellow LED	 : output relay energized	
Operating elements and controls			
Adjustment of the time range	front-face rotary switch, direct reading scales		
Fine adjustment of the time value	front-face potentiometer		
Preselection of the timing function at multifunction devices	front-face rotary switch, direct reading scales		
Adjustment of the transition time	CT-SAC	front-face potentiometer	

CT-D range

Technical data

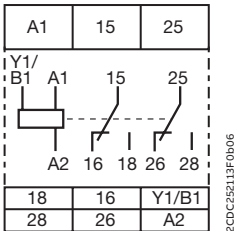
		CT-D with 1 c/o contact	CT-D with 2 c/o contacts	CT-MFC.21
Isolation data				
Rated insulation voltage U_i	input circuit / output circuit	300 V		
	output circuit 1 / output circuit 2	not available	300 V	300 V
Rated impulse withstand voltage U_{imp}	between all isolated circuits	4 kV; 1.2/50 μ s		
Power-frequency withstand voltage test(test voltage)	between all isolated circuits	2.5 kV; 50 Hz; 60 s		
Basic insulation (IEC/EN 61140)	input circuit / output circuit	300 V		
Protective separation (pollution degree 2 / overvoltage category II)	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)		
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 L-L)		
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)		
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		

CT-D range

Technical diagrams

Connection diagrams

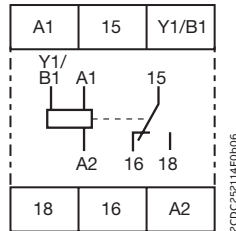
CT-MFD.21



2CDC252119F0b06

A1-A2	Supply: 12-240 V AC/DC
A1-Y1/B1	Control input
15-16/18	1st c/o contact
25-26/28	2nd c/o contact

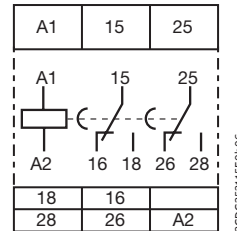
CT-MFD.12



2CDC252114F0b06

A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1st c/o contact

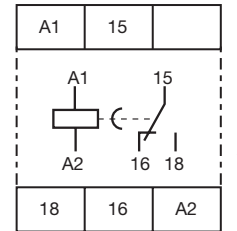
CT-ERD.22



2CDC252119F0b06

A1-A2	Supply: 24-48 V DC or 24-240 V AC
15-16/18	1st c/o contact
25-26/28	2nd c/o contact

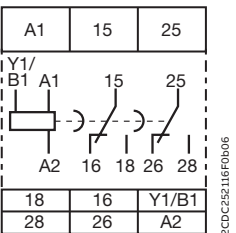
CT-ERD.12



2CDC252177F0b05

A1-A2	Supply: 24-48 V DC or 24-240 V AC
15-16/18	1st c/o contact

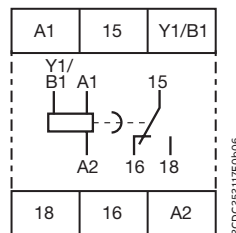
CT-AHD.22



2CDC252116F0b06

A1-A2	Supply: 24-48 V DC or 24- 240 V AC
A1-Y1/B1	Control input
15-16/18	1st c/o contact
25-26/28	2nd c/o contact

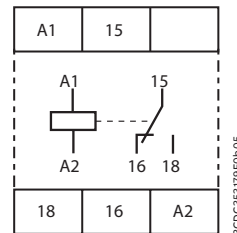
CT-AHD.12



2CDC252117F0b06

A1-A2	Supply: 24-48 V DC or 24- 240 V AC
A1-Y1/B1	Control input
15-16/18	1st c/o contact

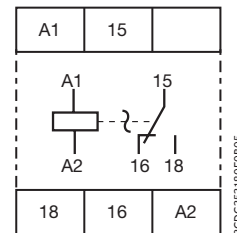
CT-VWD.12



2CDC252179F0b05

A1-A2	Supply: 24-48 V DC or 24- 240 V AC
15-16/18	1st c/o contact

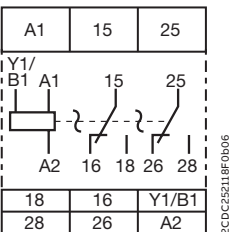
CT-EBD.12



2CDC252180F0b05

A1-A2	Supply: 24-48 V DC or 24-240 V AC
15-16/18	1st c/o contact

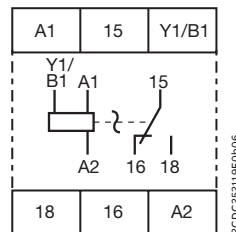
CT-TGD.22



2CDC252119F0b06

A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1st c/o contact
25-26/28	2nd c/o contact

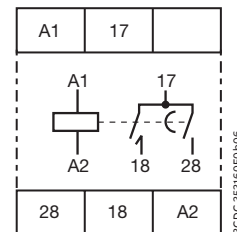
CT-TGD.12



2CDC252119F0b06

A1-A2	Supply: 24-48 V DC or 24- 240 V AC
A1-Y1/B1	Control input
15-16/18	1st c/o contact

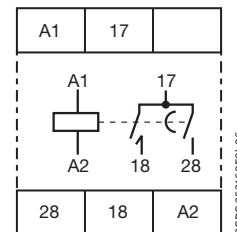
CT-SDD.22



2CDC252160F0b06

A1-A2	Supply: 24-48 V DC or 24-240 V AC
17-18	1st n/o contact (star contactor)
17-28	2nd n/o contact (delta contactor)

CT-SAD.22



2CDC252160F0b06

A1-A2	Supply: 24-48 V DC or 24-240 V AC
17-18	1st n/o contact (star contactor)
17-28	2nd n/o contact (delta contactor)



Timing functions

CT-C, CT-S, CT-D

On delay functions (Delay on make) ☒

On-delay



This function requires a continuous control supply voltage for timing. Timing begins when a control supply voltage is applied. When the selected time delay is complete, the output relay energizes. If the control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

ON-delay accumulative

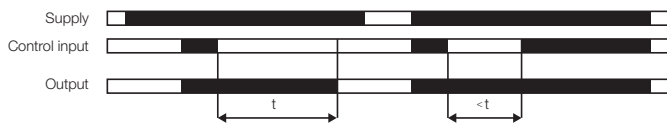


This function requires a continuous control supply voltage for timing. Timing begins when a control supply voltage is applied. When the selected time delay is complete, the output relay energizes. Timing can be paused by closing the control input.

The elapsed time t_1 is stored and continues from this time value when the control input is re-opened. If the control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

OFF delay functions (Delay on break) ■

OFF-delay with auxiliary voltage



This function requires a continuous control supply voltage for timing. If the control input is closed, the output relay energizes immediately. If the control input is opened, the time delay starts. When the selected time delay is complete, the output relay de-energizes.

If control input re-closes before the time delay is complete, the time delay is reset and the output relay does not change state. Timing starts again when the control input re-opens. If the control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

OFF-delay without auxiliary voltage



The OFF-delay function without auxiliary voltage does not require a continuous control supply voltage for timing. Applying a control supply voltage energizes the output relay. If the control supply voltage is interrupted, the OFF-delay starts. When timing is complete, the output relay de-energizes.

If a control supply voltage is re-applied before the time delay is complete, the time delay is reset and the output relay remains energized. A control supply voltage must be applied for the minimum energizing time (200 ms), for correct operation.

Timing functions

CT-C, CT-S, CT-D

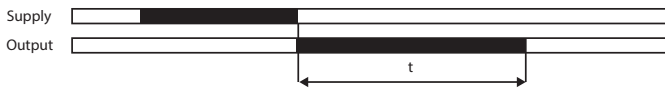
Impulse-OFF functions

Impulse-OFF with auxiliary voltage



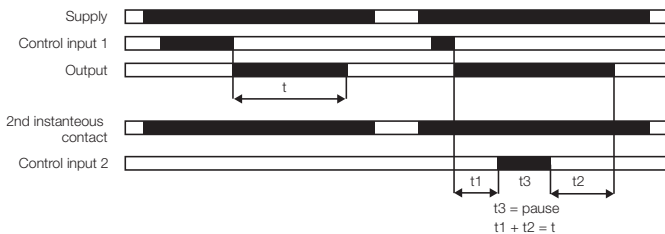
This function requires a continuous control supply voltage for timing. The output relay energizes immediately when the control input is de-energized and the output de-energizes after the set pulse time is complete. If the control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

Impulse-OFF without auxiliary voltage



This function does not require a continuous control supply voltage for timing. If the control supply voltage is interrupted, the output relay energizes and the OFF time starts. When timing is complete, the output relay de-energizes. If a control supply voltage is re-applied before the time delay is complete, the time delay is reset and the output relay de-energizes. A control supply voltage must be applied for the minimum energizing time (200 ms), for proper operation.

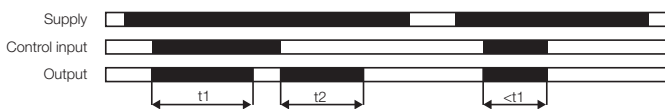
Impulse-OFF with auxiliary voltage (Trailing edge interval) accumulative



This function requires a continuous control supply voltage for timing. If a control supply voltage is applied, opening control input 1 energizes the output relay immediately and starts timing. When the selected pulse time is complete, the output relay de-energizes. Closing control input 1, before the pulse time is complete, de-energizes the output relay and resets the pulse time. Pause timing / Accumulative impulse-OFF: Timing can be paused by closing control input 2. The elapsed time t_1 is stored and continues from this time value when control input 2 is re-opened. This can be repeated as often as required. If the control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

Impulse-ON and Impulse-OFF functions

Impulse-ON and impulse-OFF



This function requires a continuous control supply voltage for timing. If a control supply voltage is applied, closing the control input energizes the output relay immediately and starts the pulse time t_1 . When t_1 is complete, the output relay de-energizes. Re-opening the control input energizes the output relay immediately and starts the pulse time t_2 . When t_2 is complete, the output relay de-energizes. t_1 and t_2 are independently adjustable. If the control input changes state before the pulse time is complete, the output relay de-energizes and the pulse time is reset. If the control input changes state again, the interrupted pulse time restarts. If the control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

Timing functions

CT-C, CT-S, CT-D

Pulse former

Puls former (single shot)



This function requires a continuous control supply voltage for timing. Closing the control input energizes the output relay immediately and starts timing. Operating the control input during the time delay has no effect. When the selected ON time is complete, the output relay de-energizes. After the ON time is complete, it can be restarted by closing the control input. If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

Single-pulse generator

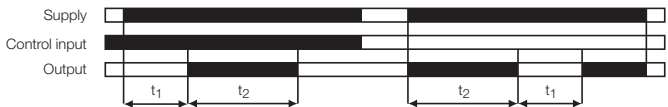
Single-pulse generator, starting with OFF



This function requires a continuous control supply voltage for timing. Applying a control supply voltage while the control input is open energizes the output relay after the OFF time t_1 is complete. When the following ON time t_2 is complete, the output relay de-energizes. Alternatively, when a control supply voltage is already applied, the timing process can be started by opening control input. Closing the control input with a control supply voltage applied, de-energizes the output relay and re-sets the time delay. The ON & OFF times are independently adjustable.

Pulse generator

Starting with the ON or OFF time
(Recycling unequal times, ON or OFF first)



This function requires a continuous control supply voltage for timing. Applying a control supply voltage, with closed control input, starts timing with an OFF time first. Applying a control supply voltage, with open control input, starts timing with an ON time first. If the control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

Impulse with delay

Fixed impulse with adjustable time delay



This function requires a continuous control supply voltage for timing. The time delay t_1 starts when a control supply voltage is applied. When t_1 is complete, the output relay energizes for the fixed impulse time t_2 of 500 ms. If the control supply voltage is interrupted, the time delay is re-set. The output relay does not change state.

Adjustable impulse with fixed time delay



This function requires a continuous control supply voltage for timing. As soon as the control supply voltage is applied the output relay will close after 500 ms. When t_2 is complete, the output relay energizes and the selected pulse time t_1 starts. When t_1 is complete, the output relay de-energizes. If the control supply voltage is interrupted, the pulse time is reset and the output relay de-energizes.

Index

Product type

Type	Order code	Page
ADP.01	1SVR430029R0100	31
COV.11	1SVR730005R0100	31
CT-MXS.22S	1SVR730030R3300	29
CT-AHC.12	1SVR508110R0000	15
CT-AHC.22	1SVR508110R0100	15
CT-AHD.12	1SVR500110R0000	47
CT-AHD.22	1SVR500110R0100	47
CT-AHS.22P	1SVR740110R3300	30
CT-AHS.22S	1SVR730110R3300	30
CT-APS.12P	1SVR740180R3100	30
CT-APS.12S	1SVR730180R3100	30
CT-APS.21P	1SVR740180R0300	30
CT-APS.21S	1SVR730180R0300	30
CT-APS.22P	1SVR740180R3300	30
CT-APS.22S	1SVR730180R3300	30
CT-ARC.12	1SVR508120R0000	15
CT-ARS.11P	1SVR740120R3100	30
CT-ARS.11S	1SVR730120R3100	30
CT-ARS.21P	1SVR740120R3300	30
CT-ARS.21S	1SVR730120R3300	30
CT-EBC.12	1SVR508150R0000	15
CT-EBD.12	1SVR500150R0000	47
CT-ERC.12	1SVR508100R0000	15
CT-ERC.22	1SVR508100R0100	15
CT-ERD.12	1SVR500100R0000	47
CT-ERD.22	1SVR500100R0100	47
CT-ERS.12P	1SVR740100R3100	30
CT-ERS.12S	1SVR730100R3100	30
CT-ERS.21P	1SVR740100R0300	30
CT-ERS.21S	1SVR730100R0300	30
CT-ERS.22P	1SVR740100R3300	30
CT-ERS.22S	1SVR730100R3300	30
CT-MBS.22P	1SVR740010R3200	29
CT-MBS.22S	1SVR730010R3200	29
CT-MFC.12	1SVR508020R0000	15
CT-MFC.21	1SVR508020R1100	15
CT-MFD.12	1SVR500020R0000	47
CT-MFD.21	1SVR500020R1100	47
CT-MFS.21P	1SVR740010R0200	29
CT-MFS.21S	1SVR730010R0200	29
CT-MKC.31	1SVR508010R1300	15
CT-MVS.12P	1SVR740020R3100	29
CT-MVS.12S	1SVR730020R3100	29
CT-MVS.21P	1SVR740020R0200	29
CT-MVS.21S	1SVR730020R0200	29
CT-MVS.22P	1SVR740020R3300	29
CT-MVS.22S	1SVR730020R3300	29
CT-MVS.23P	1SVR740021R2300	29
CT-MVS.23S	1SVR730021R2300	29
CT-MXS.22P	1SVR740030R3300	29
CT-SAC.22	1SVR508210R0100	15

Type	Order code	Page
CT-SAD.22	1SVR500210R0100	47
CT-SDC.22	1SVR508211R0100	15
CT-SDD.22	1SVR500211R0100	47
CT-SDS.22P	1SVR740210R3300	30
CT-SDS.22S	1SVR730210R3300	30
CT-SDS.23P	1SVR740211R2300	30
CT-SDS.23S	1SVR730211R2300	30
CT-TGC.12	1SVR508160R0000	15
CT-TGC.22	1SVR508160R0100	15
CT-TGD.12	1SVR500160R0000	47
CT-TGD.22	1SVR500160R0100	47
CT-VWC.12	1SVR508130R0000	15
CT-VWD.12	1SVR500130R0000	47
CT-WBS.22P	1SVR740040R3300	29
CT-WBS.22S	1SVR730040R3300	29
KA1-8029	1SFA616920R8029	31
KA1-8030	1SFA616920R8030	31
MA16-1060	1SFA611940R1060	31
MAR.01	1SVR366017R0100	31
MAR.12	1SVR730006R0000	31
MT-150B	1SFA611410R1506	31
MT-250B	1SFA611410R2506	31
MT-350B	1SFA611410R3506	31
SK 615 562-87	GJD6155620R0087	31
SK 615 562-88	GJD6155620R0088	31

ABB STOTZ-KONTAKT GmbH

Eppelheimer Strasse 82
69123 Heidelberg
Germany

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