Electronic timers
Product group picture

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Electronic timers

Electronic timers
Overview


CT-D range


CT-E range


CT-S range

Timing function	multifunctional	single-functional	multifunctional	single-functional	multifunctional	single-functional
ON-delay	CT-MFD	CT-ERD	CT-MFE, CT-MKE	CT-ERE, CT-EKE	CT-MVS, CT-MFS, CT-MBS, CT-WBS	CT-ERS
OFF-delay	CT-MFD	CT-AHD	CT-MFE	CT-AHE, CT-ARE, CT-AKE	CT-MVS, CT-MFS, CT-MBS	CT-APS, CT-AHS, CT-ARS
ON- and OFF-delay					CT-MVS, CT-MXS, CT-MFS, CT-MBS	
1 Impulse-ON	CT-MFD	CT-VWD	CT-MFE, CT-MKE	CT-VWE	CT-MVS, CT-MFS, CT-MBS, CT-WBS	
1 Impulse-OFF	CT-MFD			CT-AWE	CT-MVS, CT-MFS, CT-MBS	
1 Impulse-ON and OFF					CT-MXS	
Flasher starting with ON	CT-MFD	CT-EBD	CT-MFE, CT-MKE		CT-MFS, CT-MBS, CT-WBS	
Flasher staring with OFF	CT-MFD		CT-MFE, CT-MKE	CT-EBE	CT-MFS, CT-MBS, CT-WBS	
Flasher starting with ON or OFF					CT-MVS	
Pulse generator starting with ON or OFF		CT-TGD			CT-MXS	
Pulse former	CT-MFD		CT-MFE		CT-MVS, CT-MFS, CT-MBS	
Star-delta change-over		CT-SDD, CT-SAD				CT-SDS
Star-delta change-over with impulse				CT-SDE	CT-MVS.2x, CT-MFS, CT-MBS	
Star-delta change-over twice ON-delayed				CT-YDE		
+ 1 1 further functions (depending on device)					CT-MVS, CT-MXS, CT-MFS, CT-MBS, CT-WBS	

Technical data (extract)				
Time ranges	7 (0.05 s - 100 h) CT-SDD, CT-SAD: 4 (0.05 s - 10 min)	Multifunction devices: 8 (0.05 s - 100 h) Single-function devices: 5 single ranges (0.05-1 s, 0.1-10 s, 0.3-30 s, 3-300 s, 0.3-300 min)		10 (0.05 s - 300 h) CT-ARS, CT-SDS: 7 (0.05 s- 10 min)
Control supply voltage	Wide and multi ranges	Wide ranges	Single and dual ranges	Wide, multi and single ranges
Type and number of contacts	1 or 2 c/o contacts CT-SDD, CT-SAD: 2 n/o contacts	1 c/ o contact CT-SDE: 1 n/o contact and 1 n/c contact CT-MKE, CT-EKE, CT-AKE: 1 thyristor		1 or 2 c/o contacts CT-MVS.21, CT-MFS, CT-MBS: 2nd c/o contact selectable as inst. contact CT-SDS: 2 n/o contacts
Control inputs	voltage-related triggering, polarized, capable of switching a parallel load	voltage-related triggering, polarized CT-MFE, CT-AHE, CT-AWE: with auxiliary voltage		voltage-related triggering, non-polarized, capable of switching a parallel load CT-MFS, CT-MBS, CT-AHS: volt-free triggering

Electronic timers
Approvals and marks

■ existing
□ pending

Approvals		CT-D													
		CT-MFD.12	CT-MFD.21	CT-ERD.12	CT-ERD .22	CT-AHD.12	CT-AHD.22	CT-VWD.12	CT-EBD.12	CT-TGD.12	CT-TGD.22	CT-SDD.22	CT-SAD.22		
	UL 508, CAN/CSA C22.2 No.14	■	■	■	■	■	■	■	■	■	■	■	■		
	CB scheme	■		■		■		■	■	■					
	EAC	■	■	■	■	■	■	■	■	■	■	■	■		
	CCC	■	■	■	■	■	■	■	■	■	■	■	■		
	RMRS	■	■	■	■	■	■	■	■	■	■				
Marks															
	CE	■	■	■	■	■	■	■	■	■	■	■	■		
	C-Tick	■	□	■	□	■	□	■	■	■	□	□	□		

■ existing
□ pending

Approvals		CT-E													
		CT-MFE	CT-ERE	CT-AHE	CT-ARE	CT-VWE	CT-AWE	CT-EBE	CT-YDE	CT-SDE	CT-MKE	CT-EKE	CT-AKE		
	UL 508, CAN/CSA C22.2 No.14	■	■	■	■	■	■	■	■	■	■	■	■		
	GL	■	■	■	■	■	■	■	■	■	■	■	■		
	CB scheme	■	■	■	■	■	■	■	■	■					
	EAC	■	■	■	■	■	■	■	■	■	■	■	■		
	CCC	■	■	■	■	■	■	■	■	■					
	RMRS	■	■	■	■	■	■	■	■	■	■	■	■		
Marks															
	CE	■	■	■	■	■	■	■	■	■	■	■	■		
	C-Tick	■	■	■	■	■	■	■	■	■	■	■	■		

■ existing
□ pending

Approvals		CT-S													
		CT-MVS.12S/P	CT-MVS.2xS/P	CT-MXS.22S/P	CT-MFS.21S/P	CT-MBS.22S/P	CT-WBS.22S/P	CT-ERS.12S/P	CT-ERS.2xS/P	CT-APS.12S/P	CT-APS.2xS/P	CT-AHS.22S/P	CT-ARS.11S/P	CT-ARS.21S/P	CT-SDS.2xS/P
	UL 508, CAN/CSA C22.2 No.14	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	GL	■	■	■	■	■	■	■	■	■	■	■	□	□	■
	EAC	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	CB scheme	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	CCC	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	RMRS	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Rail applications [1]		■	■	■				■		■			■	
Marks															
	CE	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	C-Tick	■	■	■	■	■	■	■	■	■	■	■	■	■	■

[1] Applicable in rail application following the latest standards for rail applications. Further information are available in our rail segment brochure 2CDC110084B0201.

CT-D range
Product group picture

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CT-D range
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CT-D Range

CT-D range
Benefits and advantages

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Characteristics
- Diversity:
  - 2 multifunction timers
  - 10 single-function timers
- Control supply voltages:
  - Wide range: 12-240 V AC/DC
  - Multi range: 24-48 V DC, 24-240 V AC
- 7 time ranges from 0.05 s to 100 h or
  4 time ranges from 0.05 s to 10 min
- Width of only 17.5 mm
- Light-grey housing in RAL 7035
- Devices with:
  1 c/o contact (250 V / 6 A) or 2 c/o contacts (250 V / 5 A)
  Control input: voltage-related triggering, polarized, capable of switching parallel loads
- Approvals / Marks (partly pending, details see page 1/4)
  – cULus LISTED, CB[1], EAC, RCM / CE, EAC

[1] Only for devices with 1 c/o (SPDT) contact

Benefits

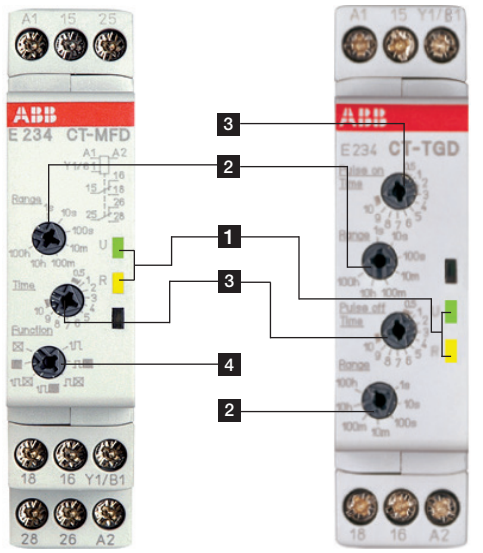
Direct reading scales ①
Direct setting of the time delay without any additional calculation provides accurate time delay adjustment.

LEDs for status indication ②
All actual operational states are displayed by front-face LEDs, thus simplifying commissioning and troubleshooting.

Switching currents
The CT-D range timers allow an output load of up to 6 A on devices with 1 c/o contact and up to 5 A on devices with 2 c/o contacts.

Connection terminals ③
Wide terminal spacing allows connection of wires:
2 x 1.5 mm² (2 x 16 AWG) with wire end ferrules or 2 x 2.5 mm² (2 x 14 AWG) without ferrules.

Width 17.5 mm ④
With their width of 17.5 mm only, the CT-D range timers are ideally suited for installation in distribution panels.

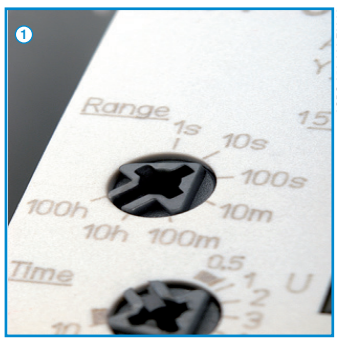


multifunctional single-functional

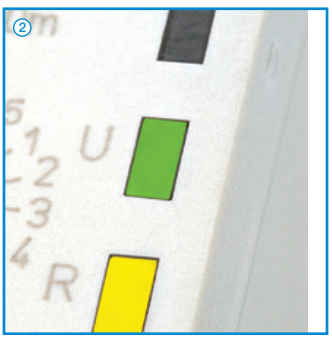
Operating controls

1 LEDs for status indication
U - green LED: ⎍ control supply voltage applied
⎍⎍ timing
R, R1, R2 - yellow LED: ⎍ output relay energized

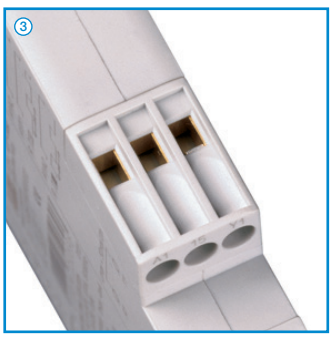
2 Time range adjustment
3 Fine adjustment of the time delay
4 Preselection of the timing function



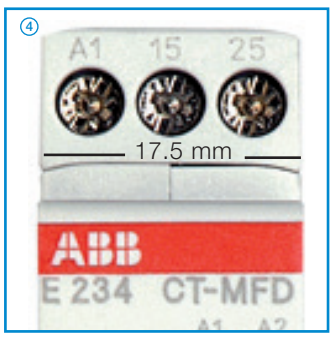
2CDC 253 066 F0006



2CDC 253 132 F0006



2CDC 253 033 F0004



2CDC 253 021 F0004

CT-D range
Ordering details

Description

The CT-D range in MDRC design with a width of only 17.5 mm fits into all domestic installation and distribution panels.
The CT-D range represents a link between industry and the installation types. For maximum flexibility in operation, 10 single-function as well as 2 multifunction devices with 7 timing functions are available. The devices offer 4 or 7 time ranges from 0.05 seconds up to 100 hours. Their wide input range allows the use in applications worldwide.

CT-MFD.12

CT-ERD.22

Ordering details

Timing function	Rated control supply voltage	Time ranges	Control input	Output	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
Multifunctional[1]	24-240 V AC 24-48 V DC	7 (0.05 s - 100 h)	■	1 c/o	CT-MFD.12	1SVR500020R0000		0.060 (0.132)
Multifunctional[1]	12-240 V AC/DC	7 (0.05 s - 100 h)	■	2 c/o	CT-MFD.21	1SVR500020R1100		0.065 (0.143)
ON-delay	24-240 V AC 24-48 V DC	7 (0.05 s - 100 h)	-	1 c/o	CT-ERD.12	1SVR500100R0000		0.060 (0.132)
			-	2 c/o	CT-ERD.22	1SVR500100R0100		0.065 (0.143)
OFF-delay			■	1 c/o	CT-AHD.12	1SVR500110R0000		0.060 (0.132)
			■	2 c/o	CT-AHD.22	1SVR500110R0100		0.065 (0.143)
Impulse-ON			-	1 c/o	CT-VWD.12	1SVR500130R0000		0.060 (0.132)
Flasher starting with ON			-		CT-EBD.12	1SVR500150R0000		
Pulse generator		2x7 (0.05 s - 100 h)	■		CT-TGD.12[2]	1SVR500160R0000		0.060 (0.132)
			■	2 c/o	CT-TGD.22[2]	1SVR500160R0100		0.065 (0.143)
Star-delta change-over		4 (0.05 s - 10 min)	-	2 c/o	CT-SDD.22[3]	1SVR500211R0100		0.065 (0.143)
			-		CT-SAD.22[4]	1SVR500210R0100		

[1] Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Flasher starting with ON, Flasher starting with OFF, Pulse former
[2] ON and OFF times adjustable independently: 2 x 7 time ranges 0.05 s - 100 h
[3] Transition time 50 ms fixed
[4] Transition time adjustable

■ Control input with voltage-related triggering
- no triggering

ON-delay
OFF-delay
Impulse-ON
Impulse-OFF
Flasher starting with ON
Flasher staring with OFF
Pulse former
Pulse generator
Star-delta change-over

Synonyms

used expression	alternative expression(s)	used expression	alternative expression(s)
1 c/o contact	SPDT	voltage-related	wet / non-floating
2 c/o contacts	DPDT	volt-free	dry / floating

CT-D range
Function diagrams

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Remarks

Legend

Control supply voltage not applied / Output contact open
Control supply voltage applied / Output contact closed
A1-Y1/B1 Control input with voltage-related triggering

Terminal designations on the device and in the diagrams

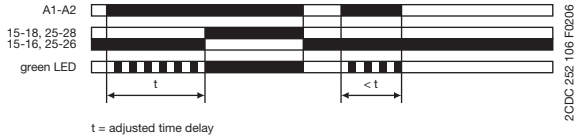
The 1st c/o contact is always designated 15-16/18.
The 2nd c/o contact is designated 25-26/28.
The n/o contacts of the star-delta timers are designated with 17-18 and 17-28.
Control supply voltage is always applied to terminals A1-A2.

Function of the yellow LED

The yellow LED R glows as soon as the output relay energizes and turns off when the output relay de-energizes.

ON-delay (Delay on make) CT-ERD, CT-MFD

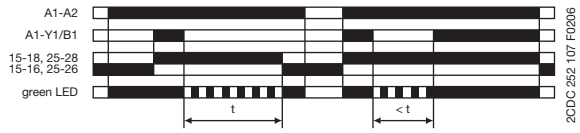
This function requires continuous control supply voltage for timing.
Timing begins when control supply voltage is applied. The green LED flashes during timing. When the selected time delay is complete, the output relay energizes and the flashing green LED turns steady.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.
Control input A1-Y1/B1 of the CT-MFD is disabled when this function is selected.



t = adjusted time delay

OFF-delay with auxiliary voltage (Delay on break) CT-AHD, CT-MFD

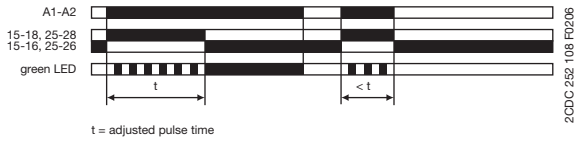
This function requires continuous control supply voltage for timing. If control input A1-Y1/B1 is closed, the output relay energizes immediately. If control input A1-Y1/B1 is opened, the time delay starts. The green LED flashes during timing. When the selected time delay is complete, the output relay de- energizes 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 relay does not change state. Timing starts again when control input A1-Y1/B1 re-opens.If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted time delay

Impulse-ON (Interval) CT-VWD, CT-MFD

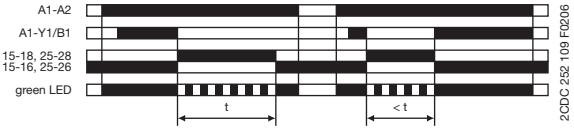
This function requires continuous control supply voltage for timing. The output relay energizes immediately when control supply voltage is applied and de-energizes after the set pulse time is complete. The green LED flashes during timing. When the selected pulse time is complete, the flashing green LED turns steady. If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset. Control input A1-Y1/B1 of the CT-MFD is disabled when this function is selected.



t = adjusted pulse time

Impulse-OFF with auxiliary voltage (Trailing edge interval) CT-MFD

This function requires continuous control supply voltage for timing. If control supply voltage is applied, opening control input A1-Y1/B1 energizes the output relay immediately and starts timing. The green LED flashes during timing. When the selected pulse time is complete, the output relay de-energizes and the flashing green LED turns steady.
Closing control input A1-Y1/B1, before the time delay is complete, de-energizes the output relay and resets the time delay. If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

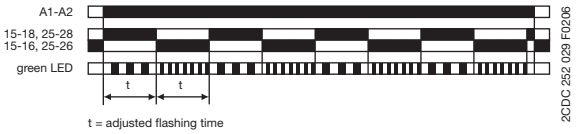


t = adjusted pulse time

CT-D range
Function diagrams

Flasher, starting with the ON time (Recycling equal times, ON first) CT-EBD, CT-MFD

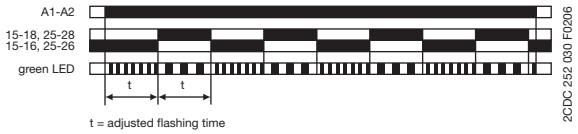
Applying control supply voltage starts timing with symmetrical ON & OFF times. The cycle starts with an ON time first. The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.
Control input A1-Y1/B1 of the CT-MFD is disabled when this function is selected.



t = adjusted flashing time

Flasher, starting with the OFF time (Recycling equal times, OFF first) CT-MFD

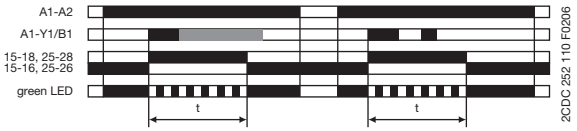
Applying control supply voltage starts timing with symmetrical ON & OFF times. The cycle starts with an OFF time first. The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.
Control input A1-Y1/B1 of the CT-MFD is disabled when this function is selected.



t = adjusted flashing time

Pulse former (Single shot) CT-MFD

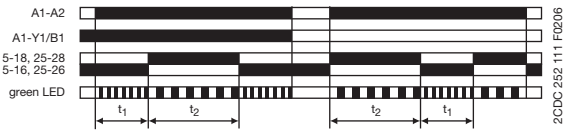
This function requires continuous control supply voltage for timing.
Closing control input A1-Y1/B1 energizes the output relay immediately and starts timing. Operating the control contact switch A1-Y1/B1 during the time delay has no effect. The green LED flashes during timing. When the selected ON time is complete, the output relay de-energizes and the flashing green LED turns steady. After the ON time is complete, it can be restarted by closing control input A1-Y1/B1.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted pulse time

Pulse generator, starting with the ON or OFF time (Recycling unequal times, ON or OFF first) CT-TGD

This function requires continuous control supply voltage for timing.
Applying control supply voltage, with open control input A1-Y1/B1, starts timing with an ON time first. Applying control supply voltage, with closed control input A1-Y1/B1, starts timing with an OFF time first. The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
The ON & OFF times are independently adjustable.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t_1 = adjusted OFF time
t_2 = adjusted ON time

CT-D range
Function diagrams

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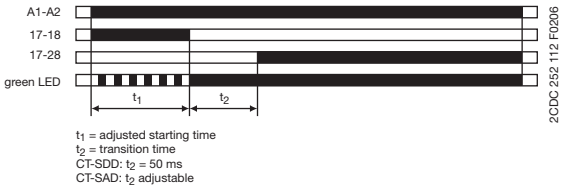
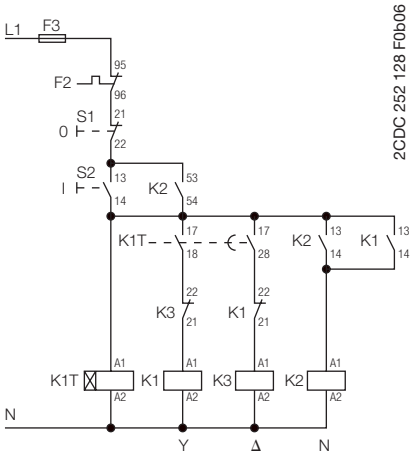
Star-delta change-over (Star-delta starting) CT-SDD, CT-SAD

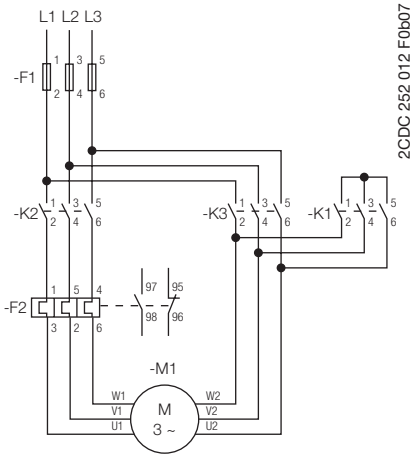
This function requires continuous control supply voltage for timing.
Applying control supply voltage to terminals A1-A2, energizes the star contactor connected to terminals 17-18 and begins the set starting time t_1. The green LED flashes during timing. When the starting time is complete, the first output contact de-energizes the star contactor.
Now, the transition time t_2 starts. When the transition time is complete, the second output contact energizes the delta contactor connected to terminals 17-28. The delta contactor remains energized as long as control supply voltage is applied to the unit.



t_1 = adjusted starting time
t_2 = transition time
CT-SDD: t_2 = 50 ms
CT-SAD: t_2 adjustable



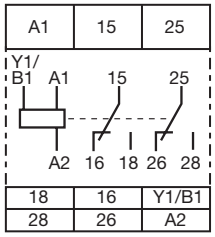
Control circuit diagram



Power circuit diagram

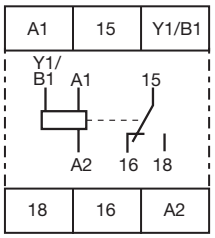
CT-D range
Connection diagrams

CT-MFD.21



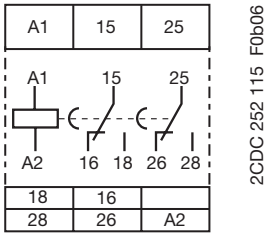
A1-A2	Supply: 12-240 V AC/DC
A1-Y1/B1	Control input
15-16/18	1. c/o contact
25-26/28	2. c/o contact

CT-MFD.12



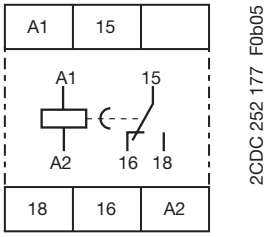
A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1. c/o contact

CT-ERD.22



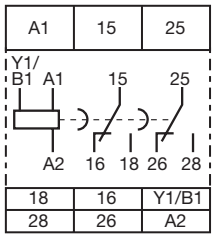
A1-A2	Supply: 24-48 V DC or 24-240 V AC
15-16/18	1. c/o contact
25-26/28	2. c/o contact

CT-ERD.12



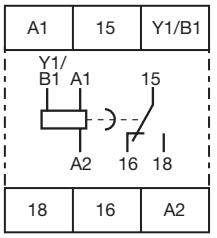
A1-A2	Supply: 24-48 V DC or 24-240 V AC
15-16/18	1. c/o contact

CT-AHD.22



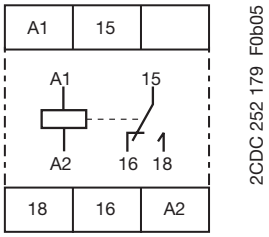
A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1. c/o contact
25-26/28	2. c/o contact

CT-AHD.12



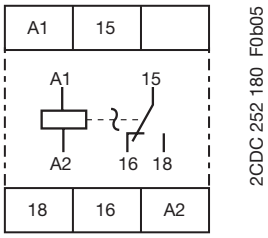
A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1. c/o contact

CT-VWD.12



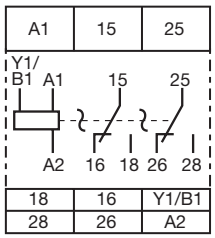
A1-A2	Supply: 24-48 V DC or 24-240 V AC
15-16/18	1. c/o contact

CT-EBD.12



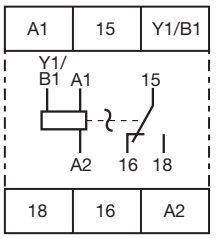
A1-A2	Supply: 24-48 V DC or 24-240 V AC
15-16/18	1. c/o contact

CT-TGD.22



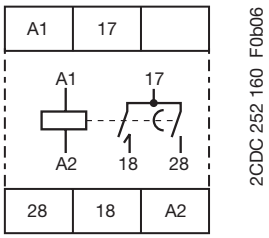
A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1. c/o contact
25-26/28	2. c/o contact

CT-TGD.12



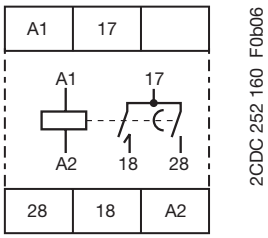
A1-A2	Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1	Control input
15-16/18	1. c/o contact

CT-SDD.22



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

CT-SAD.22



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

CT-D range
Technical data

1

Data at T_a = 25 °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 current / power consumption			see data sheet		
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			Δt < 0.005 % / V		
Accuracy within the temperature range			Δt < 0.06 % / °C		
Repeat accuracy (constant parameters)			Δt < ± 0.5 %		
Setting accuracy of time delay		IEC/EN 61812-1	± 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 (1 c/o contact / 2 c/o contacts or inst. contact)		R: 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-SAD	front-face potentiometer		
Output circuit					
Kind of output		15-16/18	Relay, 1 c/o contact	-	
		15-16/18; 25-26/28	-	Relay, 2 c/o contacts	
		17-18; 17-28		Relay, 2 n/o contacts (CT-SDD, CT-SAD)	
Contact material			AgNi alloy, Cd free		
Rated operational voltage U_e			250 V		
Minimum switching voltage / minimum switching current			12 V / 100 mA		
Maximum switching voltage / maximum switching current			250 V AC / 6 A	250 V AC / 5 A	
Rated operational current I_e (IEC/EN 60947-5-1)		AC-12 (resistive) at 230 V	6 A	5 A	
		AC-15 (inductive) at 230 V	3 A	3 A	n/o: 3 A n/c: 0.75 A
		DC-12 (resistive) at 24 V	6 A	5 A	
		DC-13 (inductive) at 24 V	2 A	2 A	1 A
AC rating (UL 508)	utilization category (Control Circuit Rating Code)		B 300		n/o: B 300 n/c: C 300
	max. rated operational voltage		300 V AC		
	Maximum continuous thermal current at B300		5 A		n/o: 5 A
	Maximum continuous thermal current at C300		-		n/c: 2.5 A
	max. making/breaking apparent power at B300		3600 VA / 360 VA		n/o: 3600/360 VA
	max. making/breaking apparent power at C300		--		n/c: 1800/180 VA
Mechanical lifetime			30 x 10^6 switching cycles		
Electrical lifetime			0.1 x 10^6 switching cycles		
Max. fuse rating to achieve short-circuit protection (IEC/EN 60947-5-1)		n/c contact	6 A fast-acting		
		n/o contact	10 A fast-acting		6 A fast-acting

CT-D range
Technical data

		CT-D with 1 c/o contact	CT-D with 2 c/o contacts	CT-MFD.21
General data				
Mean time between failures (MTBF)		on request		
Duty time		100%		
Dimensions (W x H x D)		17.5 x 70 x 58 mm (0.69 x 2.76 x 2.28 in)	17.5 x 80 x 58 mm (0.69 x 3.15 x 2.28 in)	
Weight		see ordering details		
Mounting		DIN rail (IEC/EN 60715), snap-mounting without any tool		
Mounting position		any		
Minimum distance to other units	horizontal / vertical	no / no		
Degree of protection	housing / terminals	IP50 / IP20		
Electrical connection				
Wire size	fine-strand with(out) wire end ferrule	2 x 0.5-1.5 mm² (2 x 20-16 AWG) 1 x 0.5-2.5 mm² (1 x 20-14 AWG)		
	rigid	2 x 0.5-1.5 mm² (2 x 20-16 AWG) 1 x 0.5-4 mm² (1 x 20-12 AWG)		
Stripping length		7 mm (0.28 in)		
Tightening torque		0.5-0.8 Nm (4.43-7.08 lb.in)		
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%		
Shock (half-sine)	IEC/EN 60068-2-27	150 m/s², 11 ms		
Isolation data				
Rated impulse withstand voltage U_{imp} between all isolated circuits	IEC/EN 60664-1	type test: 4 kV; 1.2/50 µs		
Pollution category	IEC/EN 60664-1	3		
Overvoltage category	IEC/EN 60664-1	III		
Rated insulation voltage U_i	input circuit / output circuit	300 V		
	output circuit 1 / output circuit 2	not available	300 V	300 V
Basic insulation (IEC/EN 61140)	input circuit / output circuit	300 V		
Protective separation (IEC/EN 61140, EN 50178)	input circuit / output circuit	250 V		
Power-frequency withstand voltage test (test voltage)	between all isolated circuits	routine test: 2.5 kV; 50 Hz; 1 s type test: 2.5 kV; 50 Hz; 60 s		
Standards				
Product standard		IEC 61812-1		
Low Voltage Directive		2006/95/EC		
EMC Directive		2004/108/EC		
RoHS Directive		2011/65/EC		
Electromagnetic compatibility				
Interference immunity to		IEC/EN 61000-6-1, 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, IEC/EN 61000-6-4		
high-frequency radiated	IEC/CISPR 22, EN 55022	Class B		
high-frequency conducted	IEC/CISPR 22, EN 55022	Class B		

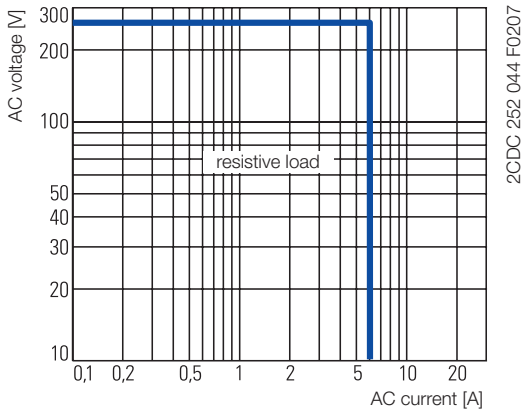
„Approvals and marks“ see page 1/4.

CT-D range
Technical data, Technical diagrams

Technical diagrams

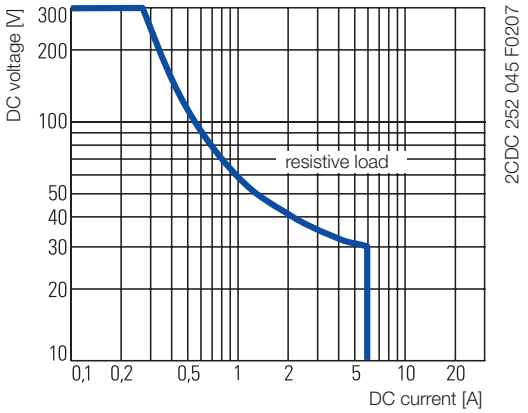
Load limit curves

AC load (resistive)

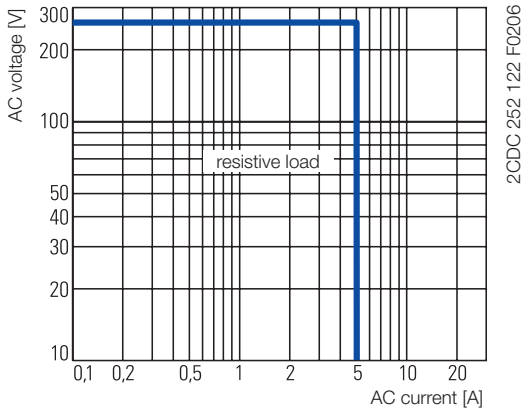


CT-D.1x

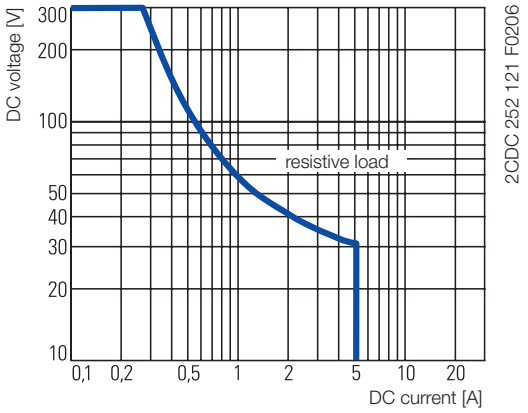
DC load (resistive)



CT-D.1x

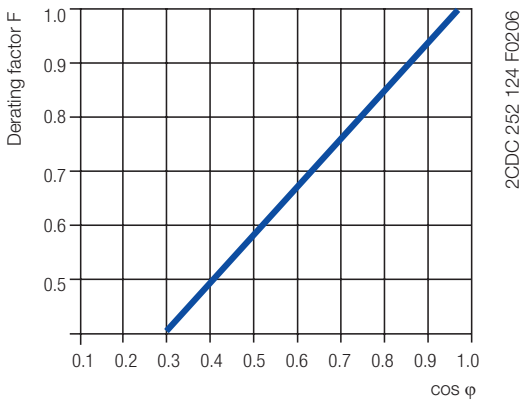


CT-D.2x

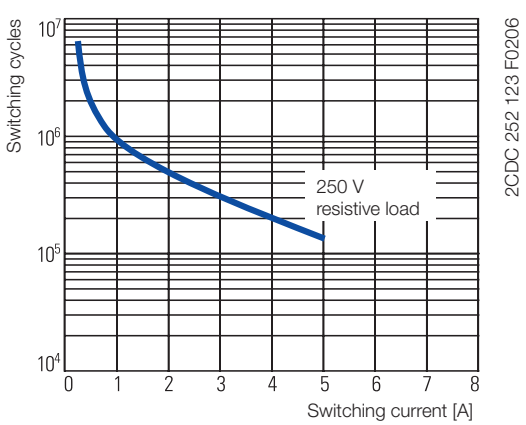


CT-D.2x

Derating factor F
for inductive AC load



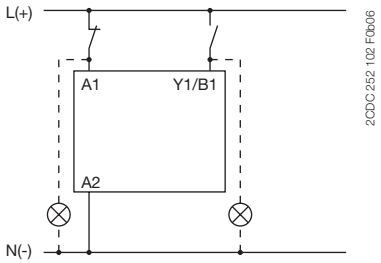
Contact lifetime



CT-D range
Wiring notes, Dimensional drawings

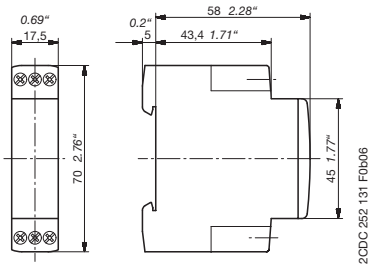
Wiring notes for devices with control input

A parallel load to the control input is possible

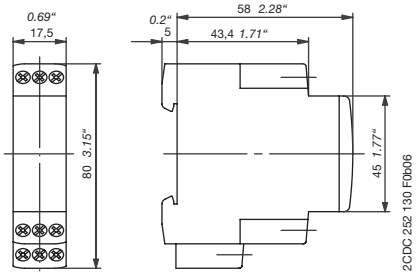


Dimensional drawings

dimensions in mm



CT-D devices with 1 c/o contact or 2 n/o contacts



CT-D devices with 2 c/o contacts

CT-E range
Product group picture

1

CT-E range
Table of contents

CT-E Range

CT-E range
Benefits and advantages

1

Characteristics
- Diversity:
  - 2 multifunction timers
  - 56 single-function timers
- Control supply voltages:
  - Dual range: 24 V AC/DC
  - Single range: 110-130 V AC, 220-240 V AC
  - Wide range: 24-240 V AC/DC (CT-MFE)
- Time ranges
  - 5 single ranges: 0.05-1 s, 0.1-10 s, 0.3-30 s, 3-300 s, 0.3-30 min
  - 8 time ranges: 0.05 s - 100 h (CT-MFE)
- Devices with 1 c/o (SPDT) contact (250 V / 4 A) or solid-state output for high switching frequencies (thyristor 0.8 A)
- Approvals / Marks (details see page 1/4)
  - cULus, GL, EAC, CB, RCM, KC / CE, EAC

Benefits

Direct reading scales ①
Direct setting of the time delay without any additional calculation provides accurate time delay adjustment.

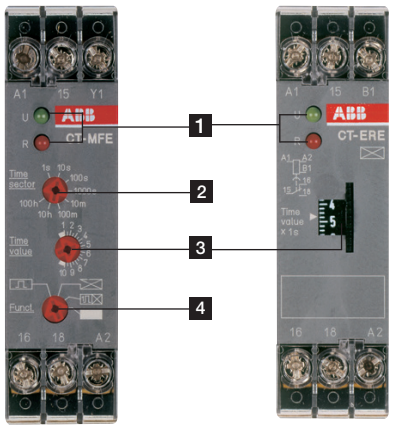
LEDs for status indication ②
All actual operational states are displayed by front-face LEDs, thus simplifying commissioning and troubleshooting.

Connection screws in M3 (Pozidrive 1) ③
Easy and fast tightening and release of the connection screws with pozidrive, pan- or crosshead screwdriver.

Solid-state output ④
Devices with solid-state output are the perfect solution for high operation cycles.

Synonyms

used expression	alternative expression(s)	used expression	alternative expression(s)
1 c/o contact	SPDT	voltage-related	wet / non-floating
2 c/o contacts	DPDT	volt-free	dry / floating



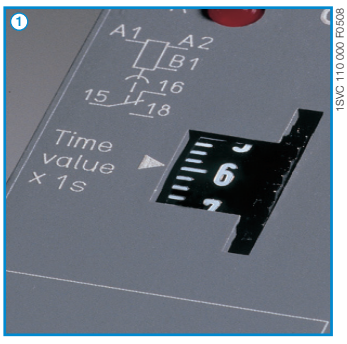
Operating controls

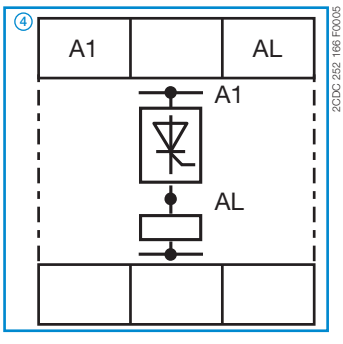
1 **LEDs for status indication**
U - green LED: ⌐¬ control supply voltage applied
R2: red LED: ⌐¬ output relay energized

2 **Time range adjustment (only multifunctional devices)**

3 **Fine adjustment of the time delay**

4 **Preselection of the timing function (only multifunctional devices)**





CT-E range
Ordering details

Description

The CT-E range with its excellent price/performance ratio offers an ideal solution for serial applications. 56 single-function devices with 5 different time ranges as well as 2 multifunction timers with 6 functions and 8 time ranges offer the highest possible flexibility for almost every application. For high operating cycles, contact-free CT-E timers with solid-state output are available.

CT-MFE

CT-AHE

ON-delay
OFF-delay
Impulse-ON
Impulse-OFF
Flasher starting with ON
Flasher staring with OFF
Pulse former

Ordering details

Timing function	Rated control supply voltage	Time ranges	Control Input	Output	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
Multifunctional [1]	24-240 V AC/DC	8 (0.05 s - 100 h)	■	1 c/o	CT-MFE	1SVR550029R8100		0.08 (0.18)
ON-delay	24 V AC/DC, 220-240 V AC	0.1-10 s	-	1 c/o	CT-ERE	1SVR550107R1100		0.08 (0.18)
		0.3-30 s				1SVR550107R4100		
		3-300 s				1SVR550107R2100		
		0.3-30 min				1SVR550107R5100		
	110-130 V AC	0.1-10 s	-			1SVR550100R1100		
		0.3-30 s				1SVR550100R4100		
		3-300 s				1SVR550100R2100		
		0.3-30 min				1SVR550100R5100		
OFF-delay	24 V AC/DC	0.1-10 s	■	1 c/o	CT-AHE	1SVR550118R1100		0.08 (0.18)
		0.3-30 s				1SVR550118R4100		
		3-300 s				1SVR550118R2100		
	110-130 V AC	0.1-10 s				1SVR550110R1100		
		0.3-30 s				1SVR550110R4100		
		3-300 s				1SVR550110R2100		
	220-240 V AC	0.1-10 s				1SVR550111R1100		
		0.3-30 s				1SVR550111R4100		
		3-300 s				1SVR550111R2100		
OFF-delay[2]	24 V AC/DC, 220-240 V AC	0.1-10 s	-	1 c/o	CT-ARE	1SVR550127R1100		0.08 (0.18)
		0.3-30 s				1SVR550127R4100		
	110-130 V AC	0.1-10 s				1SVR550120R1100		
		0.3-30 s				1SVR550120R4100		
Impulse-ON	24 V AC/DC, 220-240 V AC	0.1-10 s	-	1 c/o	CT-VWE	1SVR550137R1100		0.08 (0.18)
		0.3-30 s				1SVR550137R4100		
		3-300 s				1SVR550137R2100		
	110-130 V AC	0.1-10 s				1SVR550130R1100		
		0.3-30 s				1SVR550130R4100		
		3-300 s				1SVR550130R2100		
Impulse-OFF[2]	24 V AC/DC	0.05-1 s	-	1 c/o	CT-AWE	1SVR550158R3100		0.08 (0.18)
	110-130 V AC					1SVR550150R3100		
	220-240 V AC					1SVR550151R3100		

1) Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Flasher starting with ON, Flasher starting with OFF, Pulse former
2) without auxiliary voltage, True Off-delay timer

■ Control input with voltage-related triggering
- no triggering

CT-E range
Ordering details

1


2CDC 251 125 F0004

CT-AWE


2CDC 251 059 F0003

CT-SDE

Bestellangaben

Timing function	Rated control supply-voltage	Time ranges	Control Input	Output	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
Impulse-OFF	24 V AC/DC	0.1-10 s	■	1 c/o	CT-AWE	1SVR550148R1100		0.08 (0.18)
		0.3-30 s				1SVR550148R4100		
		3-300 s				1SVR550148R2100		
	110-130 V AC	0.1-10 s				1SVR550140R1100		
		0.3-30 s				1SVR550140R4100		
		3-300 s				1SVR550140R2100		
	220-240 V AC	0.1-10 s				1SVR550141R1100		
		0.3-30 s				1SVR550141R4100		
		3-300 s				1SVR550141R2100		
Flasher staring with OFF	24 V AC/DC, 220-240 V AC	0.1-10 s	-	1 c/o	CT-EBE [4]	1SVR550167R1100		0.08 (0.18)
	110-130 V AC					1SVR550160R1100		
Star-delta change-over twice ON-delayed	24 V AC/DC, 220-240 V AC	0.1-10 s	-	1 c/o	CT-YDE [1] [2]	1SVR550207R1100		0.08 (0.18)
		0.3-30 s				1SVR550207R4100		
		3-300 s				1SVR550207R2100		
	110-130 V AC	0.1-10 s				1SVR550200R1100		
		0.3-30 s				1SVR550200R4100		
		3-300 s				1SVR550200R2100		
Star-delta change-over with impuls	24 V AC/DC, 220-240 V AC	0.3-30 s	-	1 n/o + 1 n/c	CT-SDE [2] [5]	1SVR550217R4100		0.08 (0.18)
	110-130 V AC					1SVR550210R4100		
	380-415 V AC					1SVR550212R4100		
Multifunctional [8]	24-240V AC/DC	0.1-10 s, 3-300 s	-	solide-state	CT-MKE [3] [6]	1SVR550019R0000		0.08 (0.18)
ON-delay	24-240 V AC/DC	0.1-10 s	-		CT-EKE	1SVR550509R1000		0.08 (0.18)
		0.3-30 s				1SVR550509R4000		
		3-300 s				1SVR550509R2000		
OFF-delay	24-240 V AC	0.1-10 s	-		CT-AKE	1SVR550519R1000		0.08 (0.18)
		0.3-30 s				1SVR550519R4000		
		3-300 s				1SVR550519R2000		

⊠ ON-delay
■ OFF-delay
1⎍⊠ Impulse-ON
1⎍■ Impulse-OFF
⎍⊠ Flasher starting with ON
⎍■ Flasher staring with OFF
1⎍ Pulse former
△⊠ Star-delta change-over twice ON-delayed
△1⎍ Star-delta change-over with impulse
⎍⊠ Pulse generator starting with ON or OFF

[1] without auxiliary voltage
[2] with fixed transition time
[3] solid-state output, functions and time range selection via external jumpers
[4] symetric ON & OFF times
[5] common contact
[6] Functions: ON-delay (AC/DC), Impuls-ON (AC only), Flasher starting with OFF (AC only)

■ Control input with voltage-related triggering
- no triggering

Notice
CT-…KE are solid-state timers with thyristor output for 2-wire applications. They are connected directly in series with the control coil of contactors or relays. Voltage should not be applied without a load connected, because there is no current limiting in the unit.

CT-E range
Function diagrams

Remarks

Legend

▭ Control supply voltage not applied / Output contact open
▬ Control supply voltage applied / Output contact closed
A1-Y1/B1: Control input with voltage-related triggering

Terminal designations on the device and in the diagrams

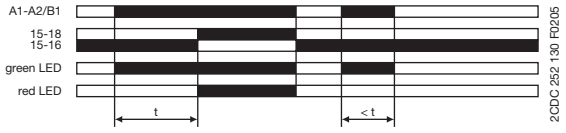
The c/o contact is always designated 15-16/18.
The n/o contacts are designated with 15-16 and 15-18.
Control supply voltage is always applied to terminals A1-A2/B1.

Function of the red LED

The red LED R glows as soon as the output relay energizes and turns off when the output relay de-energizes.

⊠ ON-delay (Delay on make) CT-ERE, CT-MFE

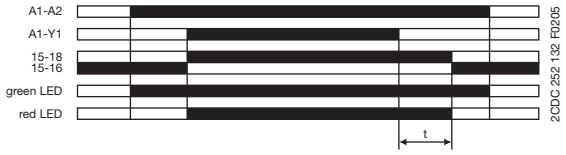
Applying control supply voltage starts timing. When the selected time delay is complete, the output relay energizes. If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset. Interrupting control supply voltage before the time delay is complete, resets the time delay. The output relay does not energize.



t = adjusted time delay

▬ OFF-delay, with auxiliary voltage (Delay on break) CT-AHE, CT-MFE

This function requires continuous control supply voltage for timing.
Timing is controlled by control input A1-Y1. If the control input is closed, the output relay energizes. If control input A1-Y1 is opened, the selected time delay starts. When the time delay is complete, the output relay de-energizes. If control input A1-Y1 is closed before the time delay is complete, the time delay is reset. Timing starts again when the control input re-opens.

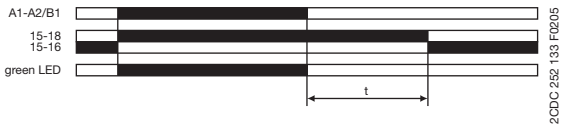


t = adjusted time delay
Minimum control pulse length: 20 ms

CT-E range
Function diagrams

OFF-delay, without auxiliary voltage (true delay on break) CT-ARE

The OFF-delay function without auxiliary voltage does not require continuous control supply voltage for timing.
Applying control supply voltage, energizes the output relay.
If control supply voltage is interrupted, the OFF-delay starts. When timing is complete, the output relay de-energizes. If control supply voltage is re-applied before the time delay is complete, the time delay is reset and the output relay remains energized.
Control supply voltage must be applied for the minimum energizing time (200 ms), for proper operation.

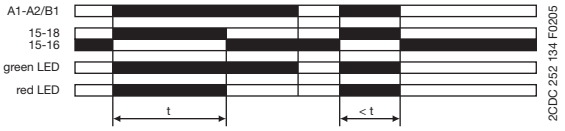


t = adjusted time delay

Impulse-ON (Interval) CT-VWE, CT-MFE

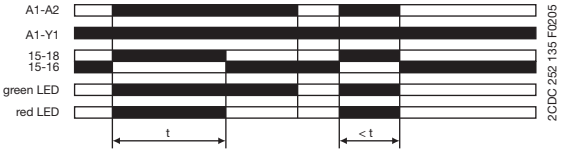
The output relay energizes immediately when control supply voltage is applied and de-energizes after the selected time delay is complete. If control supply voltage is interrupted before the time delay is complete, the output relay de-energizes and the time delay is reset.
Control input A1-Y1 has to be jumpered, when this timing function is selected.

CT-VWE:



t = adjusted pulse time

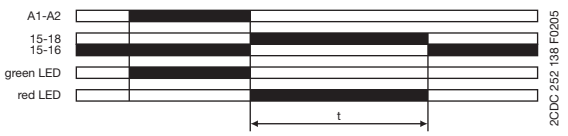
CT-MFE:



t = adjusted pulse time

Impulse-OFF, without auxiliary voltage (True trailing edge interval) CT-AWE

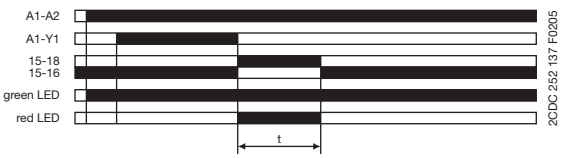
The Impulse-OFF function without auxiliary voltage does not require continuous control supply voltage for timing.
If control supply voltage is interrupted, the output relay energizes and the OFF time starts. When timing is complete, the output relay de-energizes. If control supply voltage is re-applied before the time delay is complete, the time delay is reset and the output relay de-energizes.
Control supply voltage must be applied for the minimum energizing time (200 ms), for proper operation.



t = adjusted pulse time

Impulse-OFF, with auxiliary voltage (Trailing edge interval) CT-AWE

This function requires continuous control supply voltage for timing. Timing is controlled by control input A1-Y1. If the control input is opened, the output relay energizes and timing begins. When the selected time delay is complete, the output relay de-energizes. Interrupting control supply voltage or closing control input A1-Y1, before the time delay is complete, de-energizes the output relay and resets the time delay.

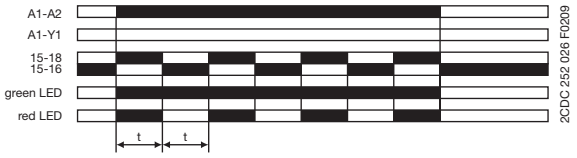


t = adjusted pulse time

CT-E range
Function diagrams

Flasher starting with ON (Recycling equal times, ON first) CT-MFE

Applying control supply voltage starts timing with symmetrical ON & OFF times. The cycle starts with an ON time first. If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.
Control input A1-Y1 has to be open, when this timing function is selected.

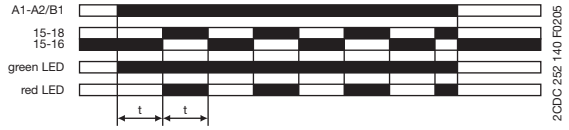


t = adjusted flashing time

Flasher starting with OFF (Recycling equal times, OFF first) CT-EBE, CT-MFE

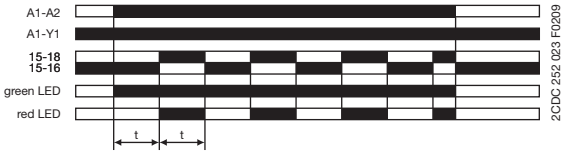
Applying control supply voltage starts timing with symmetrical ON & OFF times. The cycle starts with an OFF time first. If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.
Control input A1-Y1 has to be jumpered, when this timing function is selected.

CT-EBE:



t = adjusted flashing time

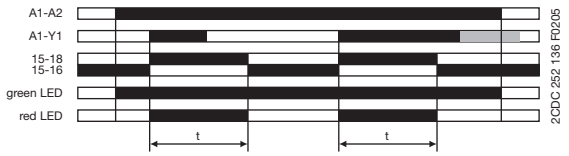
CT-MFE:



t = adjusted flashing time

Pulse former (Single shot) CT-MFE

Closing the control input A1-Y1, with control supply voltage applied, energizes the output relay for the selected ON time. Operating the control input during timing has no effect. When the ON time is complete, the output relay de-energizes. Timing can be restarted by re-closing control input A1-Y1. If control supply voltage is interrupted during timing, the output relay de-energizes and the ON time is reset.



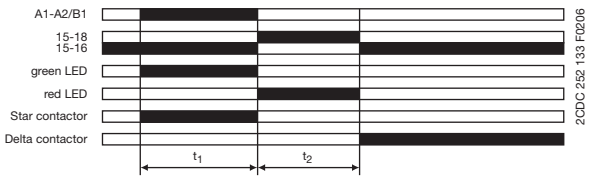
t = adjusted pulse time

CT-E range
Function diagrams

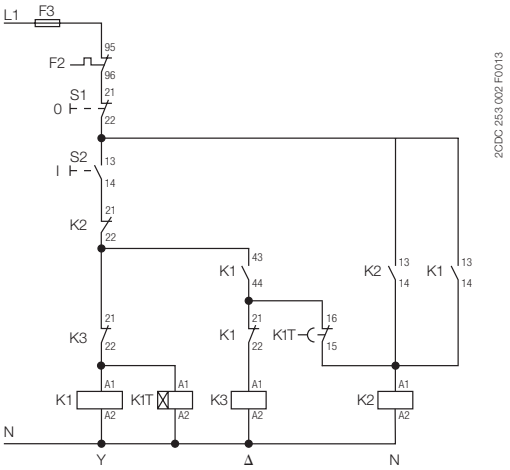
1

Star-delta change-over
CT-YDE

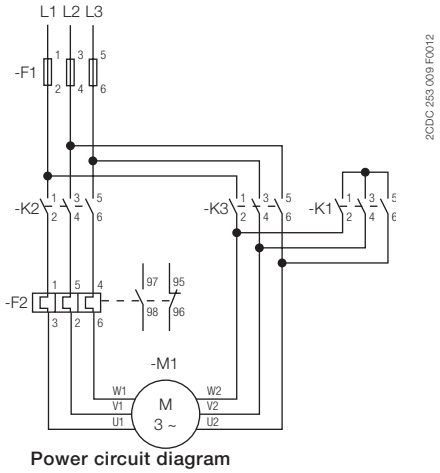
Applying control supply voltage energizes the star contactor (K1) and the line contactor (K2) and begins the set starting time. When the starting time is complete, contact 15-16 de-energizes the star contactor (K1) Now, the fix transition time starts. When the transition time is complete, contact 15-16 energizes the delta contactor (K3).



t_1 = adjustable starting time
t_2 = fixed transition time of 50 ms



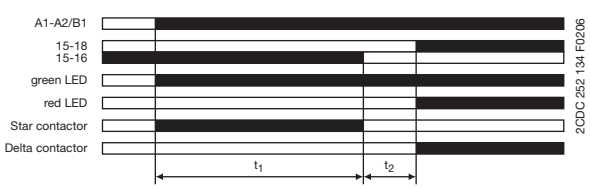
Control circuit diagram



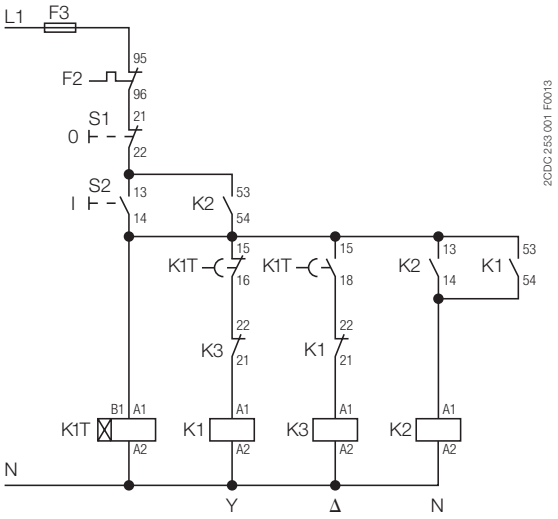
Power circuit diagram

Star-delta change-over
CT-SDE

Applying control supply voltage energizes the star contactor (K1) and the line contactor (K2) and begins the set starting time. When the starting time is complete, contact 15-16 de-energizes the star contactor (K1). Now, the fix transition time starts. When the transition time is complete, contact 15-18 energizes the delta contactor (K3).



t_1 = adjustable starting time
t_2 = fixed transition time of 30 ms



Control circuit diagram

CT-E range
Function diagrams

Multifunction timer CT-MKE

Functions and time ranges are programmed by simply plugging in external wire jumpers.

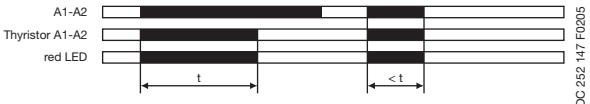
ON-delay (Delay on Make)

Without external connection. Timing begins when control supply voltage is applied to terminal A1 and the load connected in series with A2. When the selected time delay is complete, the load energizes. If control supply voltage is interrupted, the load de-energizes and the time delay is reset. Interrupting supply voltage before the time delay is complete, resets the time delay. The load does not energize.

t = adjusted time delay

Impulse-ON (Interval)

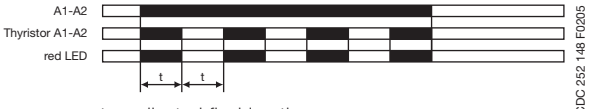
External connection X1-X4 required. The load energizes and timing starts when control supply voltage is applied to terminal A1 and the load connected in series with A2. When the selected time delay is complete, the load de-energizes. Interrupting control supply voltage before the time delay is complete, de-energizes the load and resets the time delay.



t = adjusted pulse time

Flasher, starting with ON

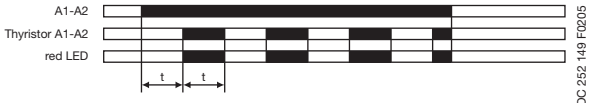
External connection X1-X4 and X2-X4 required. When control supply voltage is applied to terminal A1 and the load connected in series with A2, the load energizes and de-energizes with the selected ON & OFF times. The ON & OFF times are equal. The cycle starts with an ON time first (load energized). If control supply voltage is interrupted, the load de-energizes and the time delay is reset.



t = adjusted flashing time

Flasher, starting with OFF

External connection X2-X4 required. When control supply voltage is applied to terminal A1 and the load connected in series with A2, the load energizes and de-energizes with the selected ON & OFF times. The ON & OFF times are equal. The cycle starts with an OFF time first (load de-energized). If control supply voltage is interrupted, the load de-energizes and the time delay is reset.



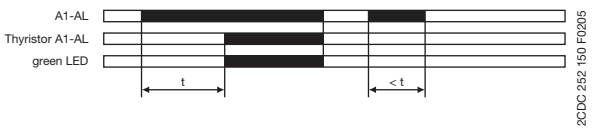
t = adjusted flashing time

Programming the time ranges

X3-X4 jumpered: 0.1-10 s
X3-X4 open: 3-300 s

ON-delay (Delay on make) CT-EKE

Timing begins when control supply voltage is applied to terminal A1 and the load connected in series with AL. When the selected time delay is complete, the load energizes. The green LED glows as long as the load is energized.
If control supply voltage is interrupted, the load de-energizes and the time delay is reset. Interrupting control supply voltage before the time delay is complete, resets the time delay. The load does not energize.



t = adjusted time delay

OFF-delay, with auxiliary voltage (Delay on break) CT-AKE

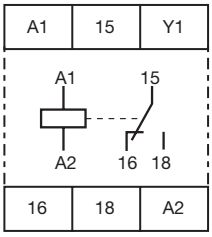
The OFF-delay function with auxiliary voltage requires continuous control supply voltage at terminal A1, and the load connected in series with AL, for timing.
Timing is controlled by control input Y2-A2. When the control input is closed, the load energizes. If the control input is opened, the selected time delay starts (minimum control pulse length is 20 ms). The green LED glows as long as the load is energized. When the selected time delay is complete, the load de-energizes. If control input Y2-A2 is closed before the time delay is complete, the time delay is reset and the load remains energized. Timing starts again when the control input is re-opened. Interrupting control supply voltage resets the time delay and de-energizes the load.

t = adjusted time delay

Notice:
CT-…KE are solid-state timers with thyristor output for 2-wire applications. They are connected directly in series with the control coil of contactors or relays. Voltage should not be applied without a load connected, because there is no current limiting in the unit.

CT-E range
Connection diagrams

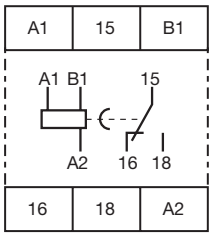
CT-MFE



2CDC 252 152 F0005

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

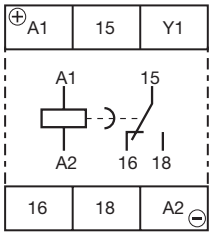
CT-ERE



2CDC 252 153 F0005

A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

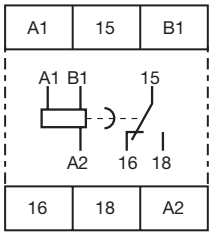
CT-AHE [1)]



2CDC 252 154 F0005

A1-A2 Supply: 24 V AC/DC or 110-240 V AC or 220-240 V AC
A1-Y1 Control input
15-16/18 c/o contact

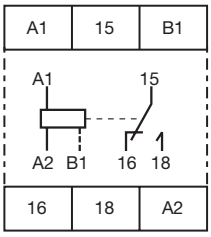
CT-ARE



2CDC 252 155 F0005

A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

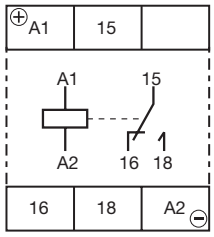
CT-VWE



2CDC 252 156 F0b05

A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

CT-AWE

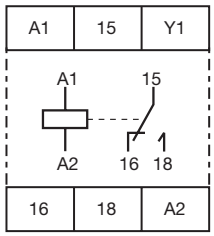


2CDC 252 157 F0b05

Device without aux. voltage

A1(+)-A2(-) Supply: 24 V AC/DC or 110-240 V AC or 220-240 V AC
15-16/18 c/o contact

CT-AWE [1)]

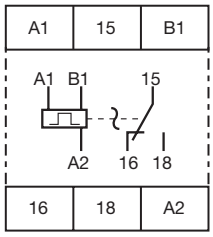


2CDC 252 158 F0b05

Device with aux. voltage

A1-A2 Supply: 24 V AC/DC or 110-240 V AC or 220-240 V AC
A1-Y1 Control input
15-16/18 c/o contact

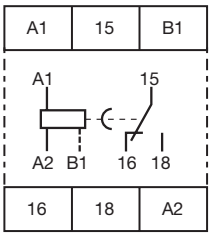
CT-EBE



2CDC 252 159 F0005

A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

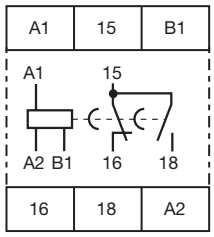
CT-YDE



2CDC 252 160 F0005

A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

CT-SDE

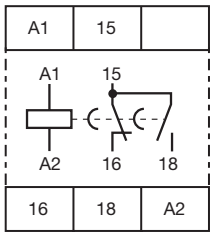


2CDC 252 161 F0005

Device: 1SVR 550 217 R4100

A1-A2 Supply: 220-240 V AC
A1-B1 Supply: 24 V AC/DC
15-16 n/c contact
15-18 n/o contact
with common contact

CT-SDE

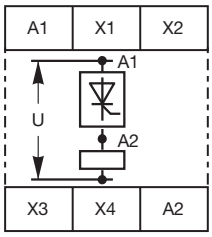


2CDC 252 162 F0005

Devices: 1SVR 550 210 R4100, 1SVR 550 212 R4100

A1-A2 Supply: 110-130 V AC or 380-415 V AC
15-16 n/c contact
15-18 n/o contact
with common contact

CT-MKE



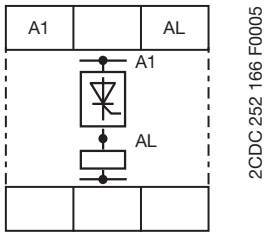
2CDC 252 165 F0005

A1-A2 Supply: 24-240 V AC/DC
A1-A2 Thyristor
X1-X4 Timing function adjustment
X2-X4 Timing function adjustment
X3-X4 Time range adjustment
(Details see function diagrams)

[1)] "„Wiring notes, Dimensional drawings" see page 1/31.

CT-E range
Connection diagrams, Technical diagrams

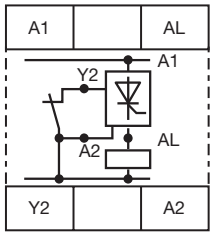
CT-EKE



2CDC 252 166 F0005

A1-AL	Supply: 24-240 V AC/DC
A1-AL	Thyristor

CT-AKE



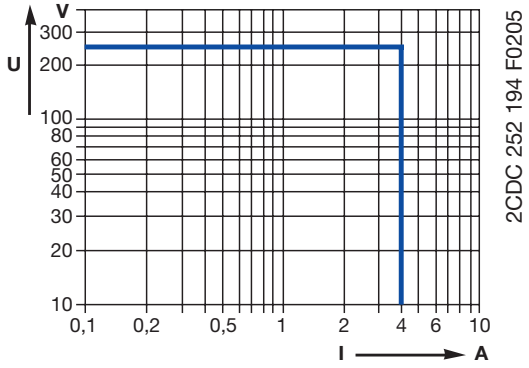
2CDC 252 167 F0005

A1-AL	Supply: 24-240 V AC
A1-AL	Thyristor
Y2-A2	Control input

Technical diagrams

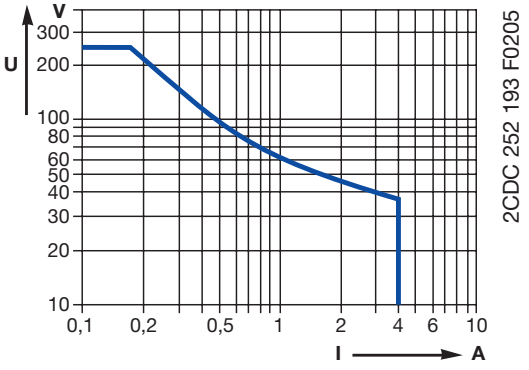
Load limit curves

AC load (resistive)



2CDC 252 194 F0205

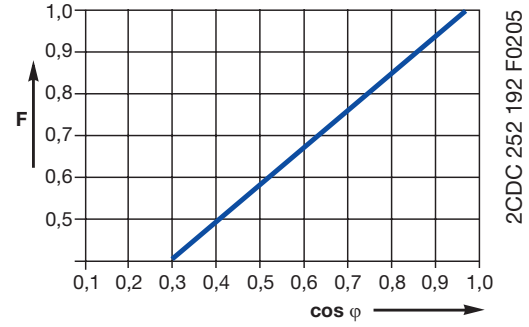
DC load (resistive)



2CDC 252 193 F0205

220 V 50 Hz AC1
360 cycles/h

Derating factor F for inductive AC load



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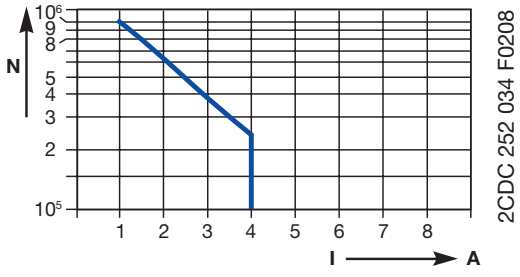
Contact lifetime



2CDC 252 034 F0208

CT-E range
Technical data

1

Technical data

Data at T_a = 25 °C and rated values, unless otherwise indicated

			CT-E (relays)	CT-E (solid-state)
Input circuit - Supply circuit				
Rated control supply voltage U_s		A1-A2, A1-AL	24-240 V AC/DC	
		A1-A2, A1-AL	24-240 V AC	
		A1-A2	110-130 V AC	-
		A1-A2	220-240 V AC	-
		A1-A2	380-415 V AC	-
		A1-B1	24 V AC/DC	-
Rated control supply voltage U_s tolerance			-15...+10 %	
Rated frequency		AC/DC versions	DC or 50/60 Hz	
		AC versions	50/60 Hz	
Typical current / power consumption		24-240 V AC/DC, 24-240 V AC	approx. 1.0-2.0 VA/W	
		110-130 V AC, 220-240 V AC	approx. 2.0 VA	-
		380-415 V AC	approx. 3.0 VA	-
		24 V AC/DC	approx. 1.0 VA/W	-
Minimum energizing time		CT-ARE, CT-AWE w/o aux. voltage	200 ms	-
Current consumption while timing			-	≤ 2 mA (24-60 V AC/DC) ≤ 8 mA (60-240 V AC/DC) (CT-AKE only AC)
Input circuit - Control circuit				
Kind of triggering			voltage-related triggering	-
Control input, Control function		A1-Y1	start timing external	-
Parallel load / polarized			no / yes [1]	-
Minimum control pulse length			20 ms	-
Control voltage potential			see rated control supply voltage	-
Timing circuit				
Time ranges	1 of 5 time ranges per single-function device		0.05-1 s / 0.1-10 s / 0.3-30 s / 3-300 s / 0.3-30 min	
	8 time ranges 0.05 s - 100 h (CT-MFE)		1.) 0.05-1 s 2.) 0.5-10 s 3.) 5-100 s 4.) 50-1000 s 5.) 0.5-10 min 6.) 5-100 min 7.) 0.5-10 h 8.) 5-100 h	-
	2 time ranges 0.1-300 s (CT-MKE)		-	1.) 0.1-10 s 2.) 3-300 s
Recovery time			<50 ms CT-ARE: <200 ms CT-AWE, CT-SDE: <400 ms CT-YDE: <500 ms	CT-EKE: <50 ms CT-MKE: <100 ms CT-AKE: <300 ms
Accuracy within the rated control supply voltage tolerance			Δt < 0.5 % / V	
Accuracy within the temperature range			Δt < 0.1 % / °C	
			CT-MFE: Δt <0.06 % / °C	-
Repeat accuracy (constant parameters)			Δt < 1 %	
Star-delta transition time		CT-YDE / CT-SDE	50 ms / 30 ms	-
Output circuit				
Kind of output		15-16/18	Relay, 1 c/o contact	-
		CT-SDE: 15-16, 15-18	1 n/c, 1 n/o contact with common contact	
		A1-A2. A1-AL	-	Thyristor
Contact material			AgCdO	-
Rated operational voltage U_e		IEC/EN 60947-1	250 V	
Maximum switching voltage			250 V AC, 250 V DC	
Rated operational current I_e (IEC/EN 60947-5-1)		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	-

[1] CT-MFE: yes / no

CT-E range
Technical data

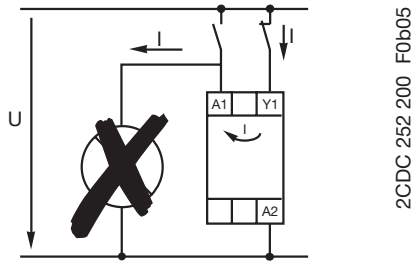
			CT-E (relays)	CT-E (solid-state)
AC rating (UL 508)	Utilization category (Control Circuit Rating Code)		B 300	-
	max. rated operational voltage		300 V AC	-
	Maximum continuous thermal current at B300		5 A	-
	max. making/breaking apparent power at B300		3600 VA / 360 VA	-
Mechanical lifetime			30 x 10^6 switching cycles	-
Electrical lifetime	at AC-12, 230 V, 4 A		0.1 x 10^6 switching cycles	-
Max. fuse rating to achieve short-circuit protection (IEC/EN 60947-5-1)	n/c contact		10 A fast-acting, CT-ARE: 5 A	-
	n/o contact		10 A fast-acting, CT-ARE: 5 A	-
Minimum load current			-	CT-MKE: 20 mA CT-EKE, CT-AKE: 10 mA
Maximum load current			-	CT-MKE: 0.8 A at T_a = 20 °C CT-EKE, CT-AKE: 0.7 A
Load current reduction / Derating			-	10 mA/°C
Maximum surge current			-	CT-MKE: ≤ 20 A for t ≤ 20 ms CT-EKE, CT-AKE: ≤ 15 A
Voltage drop in connected state			-	≤ 3 V
Cable length between solid-state timer and connected load at 50 Hz and a cable capacity of 100 pF/m :		at 24 V AC	-	220 m / 22 nF
		at 42 V AC	-	100 m / 10 nF
		at 60 V AC	-	65 m / 6.5 nF
		at 110 V AC	-	50 m / 5 nF
		at 240 V AC	-	22 m / 2.2 nF
General data				
Duty time			100%	
Dimensions (W x H x D)			22.5 x 78 x 78.5 mm (0.886 x 3.07 x 3.09 in)	
Weight			approx. 80 g (0.176 lb)	
Mounting			DIN rail (IEC/EN 60715)	
Mounting position			any	
Minimum distance to other units		horizontal / vertical	no / no	
Degree of protection		housing / terminals	IP50 / IP20	
Electrical connection				
Wire size	fine-strand with wire end ferrule		2 x 0.75-1.5 mm² (2 x 18-16 AWG)	
	fine-strand without wire end ferrule		2 x 1-1.5 mm² (2 x 18-16 AWG)	
	rigid		2 x 0.75-1.5 mm² (2 x 18-16 AWG)	
Stripping length			10 mm (0.39 in)	
Tightening torque			0.6-0.8 Nm (5.31-7.08 lb.in)	
Environmental data				
Ambient temperature ranges		operation / storage	-20...+60 °C / -40...+85 °C	
Damp heat		IEC/EN 60068-2-30	24 h cycle, 55 °C, 93 % rel., 96 h	
Operational reliability		IEC/EN 60068-2-6	6 g	
Mechanical resistance		IEC/EN 60068-2-6	10 g	
Isolation data				
Rated impulse withstand voltage U_{imp} between all isolated circuits		IEC/EN 60664-1	type test: 4 kV; 1.2/50 µs	-
Pollution category		IEC/EN 60664-1	3	3
Overvoltage category		IEC/EN 60664-1	III	III
Power-frequency withstand voltage (test voltage) between all isolated circuits			routine test: 2.5 kV; 50 Hz; 1 s type test: 2.5 kV; 50 Hz; 60 s	-
Basic insulation (IEC/EN 61140)	input circuit / output circuit		300 V	-
Rated insulation voltage U_i	input circuit / output circuit		300 V (supply up to 240 V)	-
			500 V (supply up to 440 V)	-
Test voltage between all isolated circuits		routine test	2.5 kV, 50 Hz, 1 s	-
Standards				
Product standard			IEC 61812-1, EN 61812-1 + A11, DIN VDE 0435 Teil 2021	
Low Voltage Directive			2006/95/EC	
EMC Directive			2004/108/EC	
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 61000-6-4	

„Approvals and marks“ see page 1/4.

CT-E range
Wiring notes, Dimensional drawings

1

Wiring notes
for single-function devices with control contact (CT-AHE, CT-AWE with auxiliary voltage)



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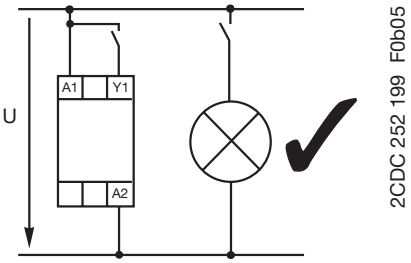

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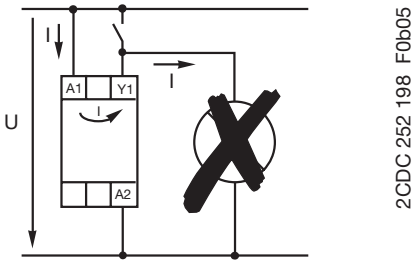

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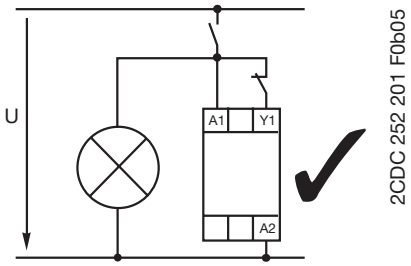

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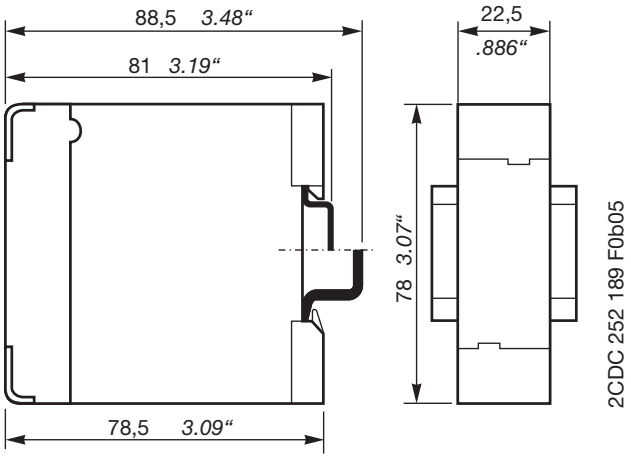
Dimensional drawing Dimensions in mm



2CDC 252 189 F0b05

CT-E range
Notes

CT-S range
Product group picture

1

CT-S range
Table of contents

CT-S Range

CT-S range
Benefits and advantages

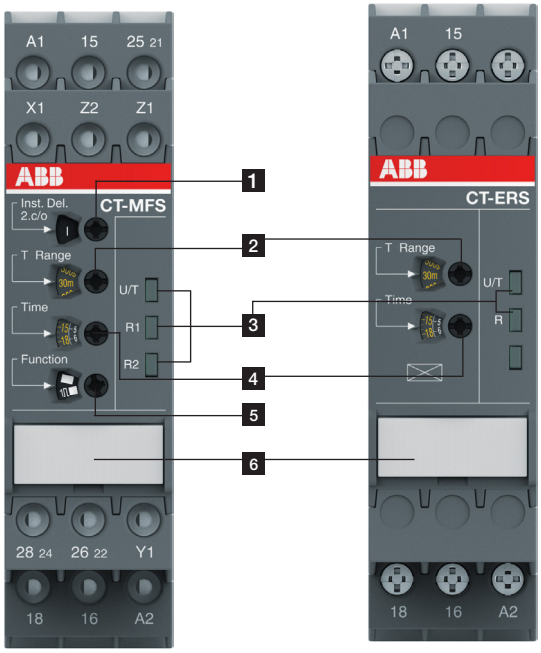
1

Characteristics

- Diversity:
  - 8 multifunction timers
  - 13 single-function timers
- Control supply voltages:
  - Multi range: 24-48 V DC, 24-240 V AC
  - Wide range: 24-240 V AC/DC
  - Single range: 380-440 V AC
- Innovative connection technology
  - Double-chamber cage connection terminals
  - Easy Connect Technology
- Devices with:
  - 1 or 2 c/o (SPDT) contacts
  - 2nd c/o contact can be selected as instantaneous contact [1)]
  - Remote potentiometer connection [1)]
  - Control input with volt-free or voltage-related triggering e.g. to start timing, pause timing
  - Extended operating temperature range down to -40 °C [1)]
- Sealable transparent cover for protection against unauthorized changes of time values
- Integrated marker label
- Approvals / Marks (partly pending, details see page 1/4)
  - , , EAC, , CB, / CE,

1) selected devices

Operating controls



1 **2nd contact as an instantaneous contact**

2 **Preselection of the time range**

3 **Indication of operational states**

U/T: control supply voltage applied / timing

R: Output relay energized

4 **Fine adjustment of time delay**

5 **Preselection of timing function**

6 **Marker label**

CT-S range
Benefits and advantages

Easy Connect Technology ①
Tool-free wiring and excellent vibration resistance. Push-in terminals provide connection of wires up to 2 x 0.5 - 1.5 mm² (2 x 20 -16 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 ②
Double-chamber cage connection terminals provide connection of wires up to 2 x 0.5-2.5 mm² (2 x 20-14 AWG) rigid or fine-strand, with or without wire end ferrules. Potential distribution does not require additional terminals. The extended type designators for products with double-chamber cage connection terminals are indicated by a **S** following the extended type designator e.g. CT-xxS.xx**S**.

Time range preselection and fine adjustment ③
Direct assignment of the preselected time range to the fine adjustment potentiometer scale by multicolor scales.

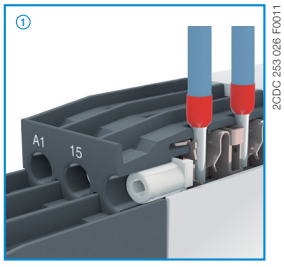
Higher utility class ④
The Easy Connect Technology provides excellent vibration resistance with gas tight push-in terminals – the right solution for harsh environment. Selected products of the electronic timers and measuring and monitoring relays comply to the latest rail standards NF F 16-101/102, EN 45545, EN 50155 and more standards which are relevant for railway applications. Find more inforamtion in the rail brochure 2CDC110084B0201.

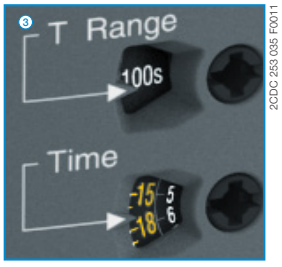
LEDs for status indication ⑤
All actual operational states are displayed by front-face LEDs, thus simplifying commissioning and troubleshooting.

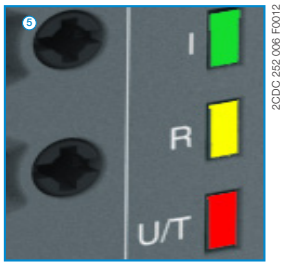
Integrated marker label ⑥
Integrated marker labels allow the product to be marked quickly and simply. No additional marker labels are required.

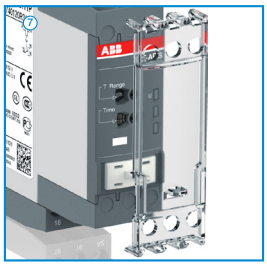
Sealable transparent cover ⑦
Protection against unauthorized changes of time and threshold values. Available as an accessory.

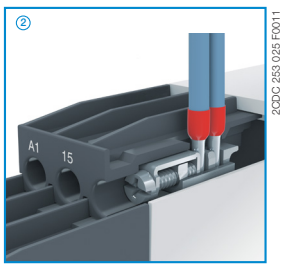
Snap-On housing ⑧
Tool-free DIN rail installation and deinstallation of the electronic timer.

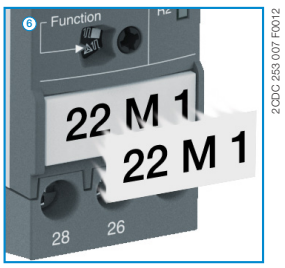


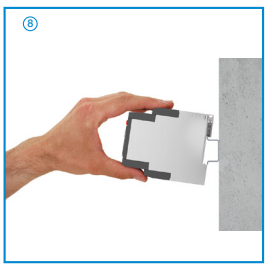




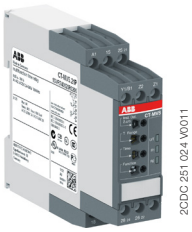




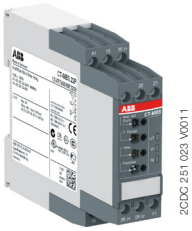




CT-S range
Ordering details - multifunctional



CT-MVS.21P



CT-MBS.22P

Description
The highly sophisticated CT-S range in ABB's new S-range housing offers two different types of connection terminals and is ideally suited for universal use. Two different connection technologies are available:
– Double-chamber cage connection terminals
– Easy Connect Technology

Accessories:
The CT-S range offers the possibility of using accessories such as a remote potentiometer to adjust the time delay or a sealable, transparent cover to protect against unauthorized changes. of time and threshold values.

Ordering details

Timing function	Rated control supply voltage	Time ranges	Control input	Output	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
Multifunctional [5]	24- 240 V AC/DC	10 (0.05 - 300 h)	■	2 c/o	CT-MVS.21S [1) 2) 3)]	1SVR730020R0200		0.148 (0.326)
					CT-MVS.21P [1) 2) 3)]	1SVR740020R0200		0.136 (0.30)
	24-48 V DC, 24-240 V AC				CT-MVS.22S	1SVR730020R3300		0.142 (0.313)
					CT-MVS.22P	1SVR740020R3300		0.131 (0.289)
	380-440 V AC				CT-MVS.23S	1SVR730021R2300		0.144 (0.317)
					CT-MVS.23P	1SVR740021R2300		0.133 (0.293)
Multifunctional [6]	24-48 V DC, 24-240 V AC	10 (0.05 s - 300 h)	■	1 c/o	CT-MVS.12S	1SVR730020R3100		0.107 (0.236)
					CT-MVS.12P	1SVR740020R3100		0.102 (0.225)
Multifunctional [7]	24-48 V DC, 24-240 V AC	2×10 (0.05 s - 300 h)	■	2 c/o	CT- MXS.22S [4)]	1SVR730030R3300		0.142 (0.313)
					CT-MXS.22P [4)]	1SVR740030R3300		0.131 (0.289)
Multifunctional [8]	24- 240 V AC/DC	10 (0.05 s - 300 h)	□ / □	2 c/o	CT-MFS.21S [1) 2) 3)]	1SVR730010R0200		0.145 (0.32)
					CT-MFS.21P [1) 2) 3)]	1SVR740010R0200		0.133 (0.293)
	24-48 V DC, 24-240 V AC	10 (0.05 s - 300 h)	□ / □	2 c/o	CT-MBS.22S [2) 3)]	1SVR730010R3200		0.14 (0.309)
					CT-MBS.22P [2) 3)]	1SVR740010R3200		0.129 (0.284)
Multifunctional [9]	24-48 V DC, 24-240 V AC	10 (0.05 s - 300 h)	-	2 c/o	CT-WBS.22S	1SVR730040R3300		0.123 (0.271)
					CT-WBS.22P	1SVR740040R3300		0.115 (0.254)

(+) ON-delay (accumulative)
OFF-delay without aux. voltage
Impulse-ON
Impulse-OFF
Symmetrical ON-delay and OFF-delay
Flasher starting with ON
Flasher staring with OFF
Pulse generator starting
Star-delta change-over with impulse
Pulse former
Star-delta change-over twice ON-delayed with ON or OFF
Pulse generator starting with ON or OFF
Single-pulse generator
Impulse-ON/OFF
Flasher starting with ON
Flasher starting with OFF
fixed impulse with adjustable time delay
Adjustable impulse with fixed time delay

■ Control input with voltage-related triggering
□ Control input with volt-free triggering
□ / □ two control input with volt-free triggering
- no triggering

S: screw connection
P: push-in / easy connect

[1)] Extended temperature range -40 °C
[2)] Remote potentiometer connection
[3)] 2nd c/o contact selectable as instantaneous contact
[4)] 2 remote potentiometer connections
[5)] Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Symmetrical ON- and OFF-delay, Flasher starting with ON or OFF, Star-delta change-over with impulse, Pulse former, Accumulative ON-delay, ON/OFF-function
[6)] Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Symmetrical ON- and OFF-delay, Flasher starting with ON or OFF, Pulse former, Accumulative ON-delay, ON/OFF-function
[7)] Functions: Select function via DIP switches behind the marker label on the front of the unit, asymmetrical ON- and OFF-delay, Impulse-ON/OFF, Pulse generator starting with ON or OFF, Single pulse generator, ON/OFF-function
[8)] Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Symmetrical ON- and OFF-delay, Flasher starting with ON, Flasher starting with OFF, Star-delta change-over with impulse, Pulse former, ON/OFF-function
[9)] Functions: Flasher starting with ON, Flasher starting with OFF, Impulse-ON, ON-delay, fixed impulse with adjustable time delay, Adjustable impulse with fixed time delay, ON/OFF-function

CT-S range
Ordering details - singlefunctional

CT-ERS.21P

CT-AHS.22P

CT-SDS.23P

Timing function	Rated control supply voltage	Time ranges	Control input	Output	Type	Order code	Price 1 pce	Weight (1 pce) 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)
	24-48 V DC, 24-240 V AC				CT-ERS.22S	1SVR730100R3300		0.121 (0.267)
					CT-ERS.22P	1SVR740100R3300		0.113 (0.249)
	24-48 V DC, 24-240 V AC		-	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)
	24-48 V DC, 24-240 V AC				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[5]	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[6]	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)
	380-440 V AC				CT-SDS.23S	1SVR730211R2300		0.118 (0.26)
					CT-SDS.23P	1SVR740211R2300		0.112 (0.247)

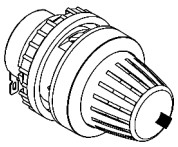
[1] Extended temperature range -40 °C
[2] Remote potentiometer connection
[3] 2nd c/o contact selectable as instantaneous contact
[4] 2 remote potentiometer connections
[5] Without auxiliary voltage
[6] 50 ms transition time

■ Control input with voltage-related triggering
☐ Control input with volt-free triggering
☐ / ☐ two control input with volt-free triggering
- no triggering

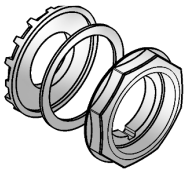
S: screw connection
P: push-in / easy connect

⊠(+) ON-delay (accumulative)
■ OFF-delay without aux.voltage
1⎍⊠ Impulse-ON
⎍⊠ Flasher starting with ON
⎍■ Flasher staring with OFF
1⎍■ Impulse-ON/OFF
⎍⊠ Flasher starting with ON
⎍■ Flasher starting with OFF
⊠1⎍ fixed impulse with adjustable time delay
■1⎍ Adjustable impulse with fixed time delay
⚠ Star-delta change-over

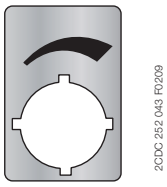
CT-S range
Ordering details - Accessories



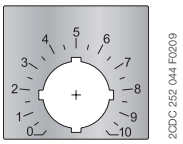
MT-x50B



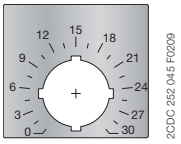
30 mm adapters



Marker label 29.6 x 44.5 mm



Marker label with scale 0-10
48.5 x 44.5 mm

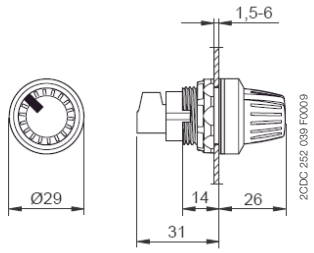


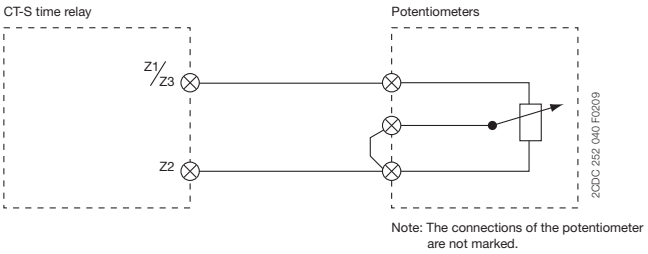
Marker label with scale 0-30
48.5 x 44.5 mm

Remote potentiometer

50 kΩ ±20 % - 0.2 Ω, degree of protection IP66

Material	Diameter in mm	Type	Order code	Price 1 piece	Pack.-unit pieces	Weight 1 piece g / oz
Plastic, black	22.5	MT-150B	1SFA611410R1506		1	0.040
Plastic, chrome	22.5	MT-250B	1SFA611410R2506		1	0.040
Metal, chrome	22.5	MT-350B	1SFA611410R3506		1	0.048





Note: The connections of the potentiometer are not marked.

Note: Technical specifications see data sheet

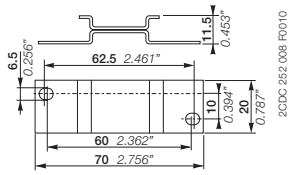
30 mm adapter for attaching the potentiometer 22 mm in 30 mm mounting hole

Material	Type	Order code	Price 1 piece	Pack.-unit pieces	Weight 1 piece g / oz
Plastic, black	KA1-8029	1SFA616920R8029		1	
Metal, chrome	KA1-8030	1SFA616920R8030		1	

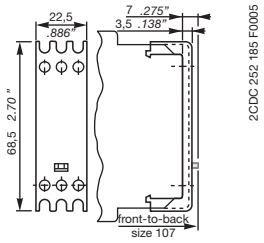
Marker label

Caption	Type	Order code	Price 1 piece	Pack.-unit pieces	Weight 1 piece g / oz
Symbol (see illustration)	SK 615 562-87	GJD6155620R0087		1	0.002
Scale 0 - 10	SK 615 562-88	GJD6155620R0088		1	0.002
Scale 0 - 30	MA16-1060	1SFA611940R1060		1	0.002

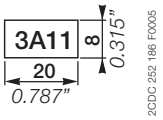
CT-S range
Ordering details - Accessories



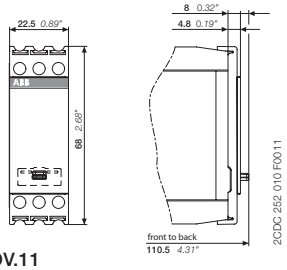
ADP.01



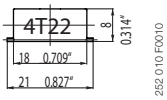
COV.01



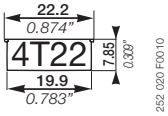
MAR.01



COV.11



MAR.02



MAR.12

Accessories for CT-S in new housing (1SVR7...)

Description	Type	Order code	Price 1 piece	Pack.-unit pieces	Weight 1 piece g / oz
Adapter for screw mounting	ADP.01	1SVR430029R0100		1	0.018 (0.040)
Sealable transparent cover	COV.11	1SVR730005R0100		1	0.004 (0.009)
Marker label for devices w/o DIP switches	MAR.01	1SVR366017R0100		10	0.001 (0.002)
Marker label for devices with DIP switches	MAR.12	1SVR730006R0000		10	0.001 (0.002)

Accessories for CT-S in old housing (1SVR4...)

Description	Type	Order code	Price 1 piece	Pack.-unit pieces	Weight 1 piece g / oz
Adapter for screw mounting	ADP.01	1SVR430029R0100		1	0.018 (0.040)
Sealable transparent cover	COV.01	1SVR430005R0100		1	0.004 (0.009)
Marker label for devices w/o DIP switches	MAR.01	1SVR366017R0100		10	0.001 (0.002)
Marker label for devices with DIP switches	MAR.02	1SVR430043R0000		10	0.001 (0.002)

CT-S range
Function diagrams

1

Remarks

Legend

Control supply voltage not applied / Output contact open

Control supply voltage applied / Output contact closed

A1-Y1/B1 Control input with voltage-related triggering
Y1-Z2 Control input with volt-free triggering
X1-Z2 Control input with volt-free triggering

Remote potentiometer connection:

When an external potentiometer is connected to the remote potentiometer connection (terminals Z1-Z2, Z3-Z2 respectively), the internal, front-face potentiometer is disabled and the time adjustment is made via the external potentiometer.

2nd c/o contact selectable as instantaneous contact:

When switch position Inst. “I” is selected, the functionality of the 2nd c/o contact changes to an instantaneous contact. It acts like the c/o contacts of a switching relay, i.e. applying or interrupting the control supply voltage energizes or de-energizes the c/o contact. The designation of the 2nd c/o contact changes from 25-26/28 to 21-22/24, when selected as instantaneous contact.

Terminal designations on the device and in the diagrams:

The 1st c/o contact is always designated 15-16/18.
The 2nd c/o contact is designated 25-26/28, if it responds to the time delay.
If the 2nd c/o contact is selected as an instantaneous contact, the designation 25-26/28 is replaced by 21-22/24.
Control supply voltage is always applied to terminals A1-A2.

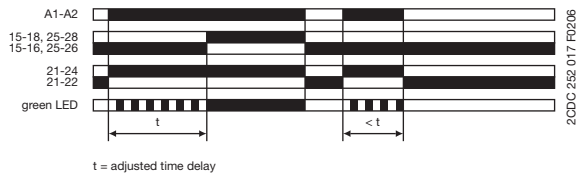
Function of the yellow LEDs:

On devices without the function ‘2nd c/o contact selectable as instantaneous contact’, the yellow LED R glows as soon as the output relay energizes and turns off when the output relay de-energizes.

Devices with the function ‘2nd c/o contact selectable as instantaneous contact’ have two yellow LEDs, designated R1 and R2. LED R1 shows the status of the 1st c/o contact (15-16/18) and LED R2 shows the status of the 2nd c/o contact (25-26/28, 21-22/24 resp.). LED R1 or R2 glow as soon as the corresponding output relay energizes and turns off when the corresponding output relay de-energizes.

ON-delay
(Delay on make)
CT-MVS, CT-ERS, CT-WBS

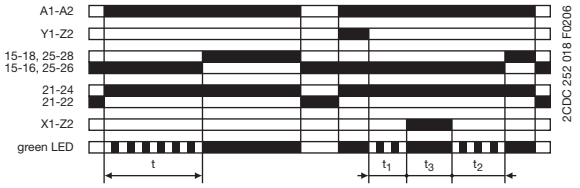
This function requires continuous control supply voltage for timing.
Timing begins when control supply voltage is applied. The green LED flashes during timing. When the selected time delay is complete, the output relay energizes and the flashing green LED turns steady.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted time delay

ON-delay
(Delay on make)
CT-MFS, CT-MBS

This function requires continuous control supply voltage for timing.
If control input Y1-Z2 is open, timing begins when control supply voltage is applied. Or, if control supply voltage is already applied, opening control input Y1-Z2 also starts timing. The green LED flashes during timing. When the selected time delay is complete, the output relay energizes and the flashing green LED turns steady.
If control input Y1-Z2 closes before the time delay is complete, the time delay is reset and the output relay remains de-energized.
Pause timing / Accumulative ON-delay (CT-MFS):
Timing can be paused by closing control input X1-Z2. The elapsed time t1 is stored and continues from this time value when X1-Z2 is re-opened. This can be repeated as often as required.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



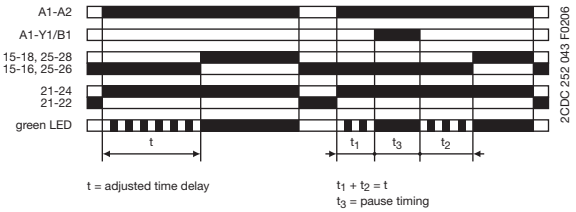
t = adjusted time delay

$t_1 + t_2 = t$
t_3 = pause timing

CT-S range
Function diagrams

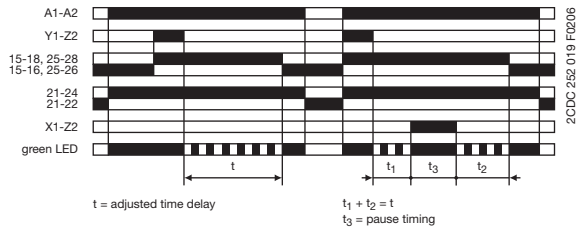
Accumulative ON-delay (Accumulative delay on make) CT-MVS

This function requires continuous control supply voltage for timing.
Timing begins when control supply voltage is applied. The green LED flashes during timing. When the selected time delay is complete, the output relay energizes and the flashing green LED turns steady.
Timing can be paused by closing control input A1-Y1/B1. The elapsed time t1 is stored and continues from this time value when A1-Y1/B1 is re-opened.
This can be repeated as often as required.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



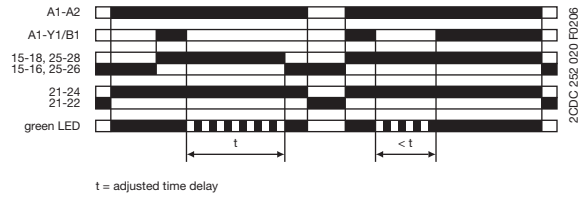
OFF-delay with auxiliary voltage (Delay on break) CT-MFS, CT-MBS, CT-AHS

This function requires continuous control supply voltage for timing.
If control input Y1-Z2 is closed, the output relay energizes immediately. If control input Y1-Z2 is opened, the time delay starts. The green LED flashes during timing. When the selected time delay is complete, the output relay de- energizes and the flashing green LED turns steady.
If control input Y1-Z2 closes before the time delay is complete, the time delay is reset and the output relay does not change state. Timing starts again when control input Y1-Z2 re-opens.
Pause timing / Accumulative OFF-delay (CT-MFS):
Timing can be paused by closing control input X1-Z2. The elapsed time t1 is stored and continues from this time value when X1-Z2 is re-opened.
This can be repeated as often as required.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



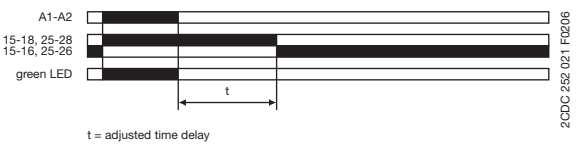
OFF-delay with auxiliary voltage (Delay on break) CT-MVS, CT-APS

This function requires continuous control supply voltage for timing.
If control input A1-Y1/B1 is closed, the output relay energizes 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 relay de-energizes 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 relay does not change state. Timing starts again when control input A1-Y1/B1 re-opens.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



OFF-delay without auxiliary voltage (True delay on break) CT-ARS

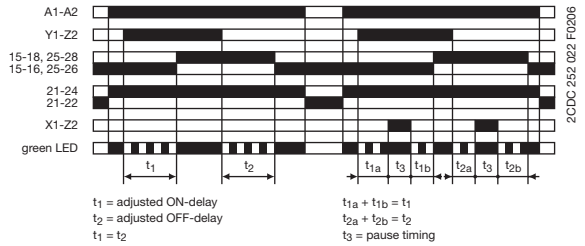
The OFF-delay function without auxiliary voltage does not require continuous control supply voltage for timing. After a storage time of several months without any voltage, a formatting time of about 5 minutes is necessary.
Applying control supply voltage energizes the output relay immediately. Applied control supply voltage is displayed by the glowing green LED. If control supply voltage is interrupted, the OFF-delay starts and the LED turns off. When timing is complete, the output relay de-energizes.
For correct operation of the unit, it is necessary to complete the minimum energizing time. As soon as timing starts, the LED turns off.



CT-S range
Function diagrams

Symmetrical ON-delay and OFF-delay (Symmetrical delay on make and delay on break) CT-MFS, CT-MBS

This function requires continuous control supply voltage for timing.
Closing control input Y1-Z2 starts the ON-delay t_1. When timing is complete, the output relay energizes. Opening control input Y1-Z2 starts the OFF-delay t_2. Both timing functions are displayed by the flashing green LED. When the OFF-delay t_2 is complete, the output relay de-energizes.
If control input Y1-Z2 opens before the ON-delay t_1 is complete, the time delay is reset and the output relay remains de-energized. If control input Y1-Z2 closes before the OFF-delay t_2 is complete, the time delay is reset and the output relay remains energized.
Pause timing / Accumulative, symmetrical ON-delay and OFF-delay (CT-MFS): Timing can be paused by closing control input X1-Z2. The elapsed time t_{1a} or t_{2a} is stored and continues from this time value when X1-Z2 is re-opened. This can be repeated as often as required.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

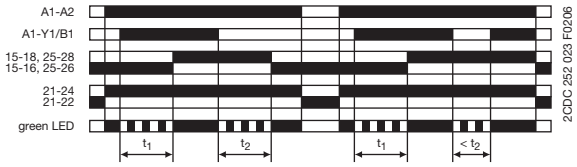


t_1 = adjusted ON-delay
t_2 = adjusted OFF-delay
$t_1 = t_2$

$t_{1a} + t_{1b} = t_1$
$t_{2a} + t_{2b} = t_2$
t_3 = pause timing

Symmetrical ON-delay and OFF-delay (Symmetrical delay on make and delay on break) CT-MVS

This function requires continuous control supply voltage for timing.
Closing control input A1-Y1/B1 starts the ON-delay t_1. When timing is complete, the output relay energizes. Opening control input A1-Y1/B1 starts the OFF-delay t_2. Both timing functions are displayed by the flashing green LED. When the OFF-delay t_2 is complete, the output relay de-energizes.
If control input A1-Y1/B1 opens before the ON-delay t_1 is complete, the time delay is reset and the output relay remains de-energized. If control input A1-Y1/B1 closes before the OFF-delay t_2 is complete, the time delay is reset and the output relay remains energized.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

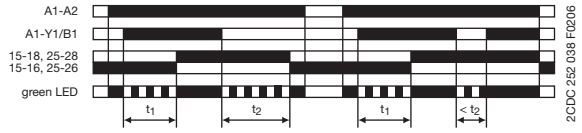


t_1 = adjusted ON-delay
t_2 = adjusted OFF-delay
$t_1 = t_2$

CT-S range
Function diagrams

Asymmetrical ON-delay and OFF-delay (Asymmetrical delay on make and delay on break) CT-MXS

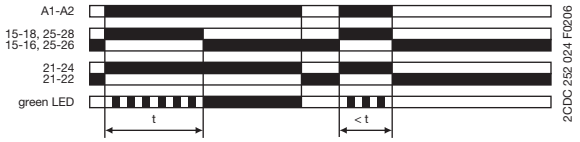
This function requires continuous control supply voltage for timing.
Closing control input A1-Y1/B1 starts the ON-delay t_1. When timing is complete, the output relay energizes. Opening control input A1-Y1/B1 starts the OFF-delay t_2. When the OFF-delay is complete, the output relay de-energizes. Both timing functions are displayed by the flashing green LED. The ON-delay and OFF-delay are independently adjustable.
If control input A1-Y1/B1 opens before the ON-delay is complete ($<t_1$), the time delay is reset and the output relay remains de-energized.
If control input A1-Y1/B1 closes before the OFF-delay is complete ($<t_2$), the time delay is reset and the output relay remains energized.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t_1 = adjusted ON-delay
t_2 = adjusted OFF-delay
t_1 and t_2 independently adjustable

Impulse-ON (Interval) CT-MVS, CT-WBS

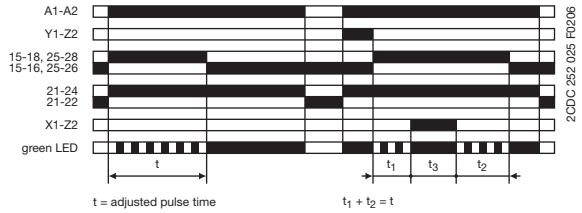
This function requires continuous control supply voltage for timing.
The output relay energizes immediately when control supply voltage is applied and de-energizes after the set pulse time is complete. The green LED flashes during timing. When the selected pulse time is complete, the flashing green LED turns steady.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted pulse time

Impulse-ON (Interval) CT-MFS, CT-MBS

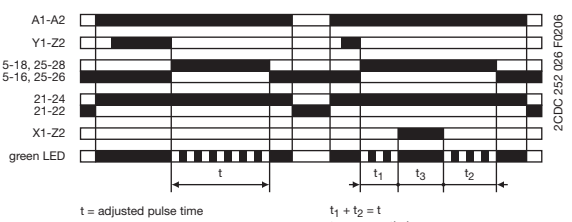
This function requires continuous control supply voltage for timing.
The output relay energizes immediately when control supply voltage is applied and de-energizes after the set pulse time is complete. If control input Y1-Z2 is open, timing begins when control supply voltage is applied. Or, if control supply voltage is already applied, opening control input Y1-Z2 starts timing.
The green LED flashes during timing. When the selected pulse time is complete, the output relay de-energizes and the flashing green LED turns steady.
Closing control input Y1-Z2, before the pulse time is complete, de-energizes the output relay and resets the pulse time.
Pause timing / Accumulative impulse-ON (CT-MFS):
Timing can be paused by closing control input X1-Z2. The elapsed time t_1 is stored and continues from this time value when X1-Z2 is re-opened.
This can be repeated as often as required.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted pulse time
$t_1 + t_2 = t$
t_3 = pause timing

Impulse-OFF with auxiliary voltage (Trailing edge interval) CT-MFS, CT-MBS

This function requires continuous control supply voltage for timing.
If control supply voltage is applied, opening control input Y1-Z2 energizes the output relay immediately and starts timing.
The green LED flashes during timing. When the selected pulse time is complete, the output relay de-energizes and the flashing green LED turns steady.
Closing control input Y1-Z2, before the pulse time is complete, de-energizes the output relay and resets the pulse time.
Pause timing / Accumulative impulse-OFF (CT-MFS):
Timing can be paused by closing control input X1-Z2. The elapsed time t_1 is stored and continues from this time value when X1-Z2 is re-opened.
This can be repeated as often as required.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

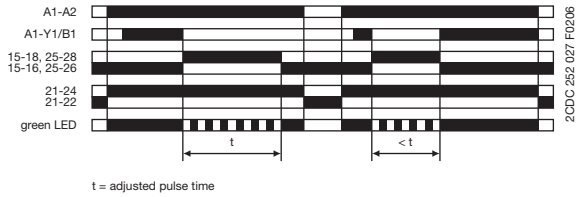


t = adjusted pulse time
$t_1 + t_2 = t$
t_3 = pause timing

CT-S range
Function diagrams

Impulse-OFF with auxiliary voltage (Trailing edge interval) CT-MVS

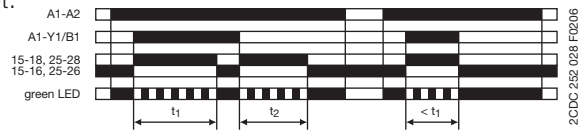
This function requires continuous control supply voltage for timing.
If control supply voltage is applied, opening control input A1-Y1/B1 energizes the output relay immediately and starts timing. The green LED flashes during timing. When the selected pulse time is complete, the output relay de-energizes and the flashing green LED turns steady.
Closing control input A1-Y1/B1, before the pulse time is complete, de-energizes the output relay and resets the pulse time.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted pulse time

Impulse-ON and impulse-OFF (Interval and trailing edge interval) CT-MXS

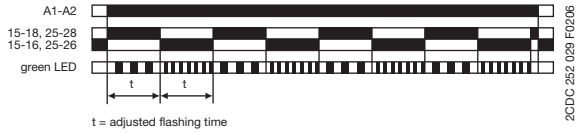
This function requires continuous control supply voltage for timing. If control supply voltage is applied, closing control input A1-Y1/B1 energizes the output relay immediately and starts the pulse time t_1. The green LED flashes during timing. When t_1 is complete, the output relay de-energizes and the flashing green LED turns steady. Re-opening control input A1-Y1/B1 energizes the output relay immediately and starts the pulse time t2. The green LED flashes during timing. When t_2 is complete, the output relay de-energizes and the flashing green LED turns steady. t_1 and t_2 are independently adjustable. If control input A1-Y1/B1 changes state before the pulse time is complete, the output relay de-energizes and the pulse time is reset. If control input A1-Y1/B1 changes state again, the interrupted pulse time restarts. If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t_1 = adjusted pulse time 1
t_2 = adjusted pulse time 2

Flasher, starting with the ON time (Recycling equal times, ON first) CT-WBS

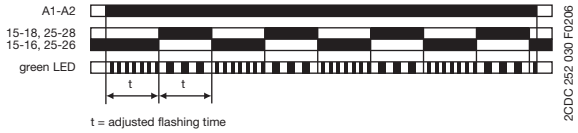
Applying control supply voltage starts timing with symmetrical ON & OFF times. The cycle starts with an ON time first. The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted flashing time

Flasher, starting with the OFF time (Recycling equal times, OFF first) CT-WBS

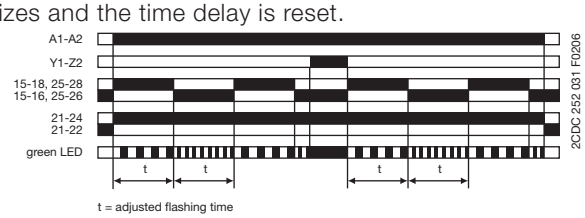
Applying control supply voltage starts timing with symmetrical ON & OFF times. The cycle starts with an OFF time first. The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted flashing time

Flasher with reset, starting with the ON time (Recycling equal times with reset, ON first) CT-MFS, CT-MBS

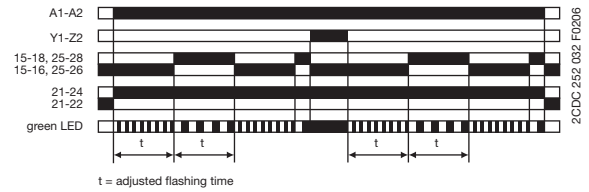
Applying control supply voltage starts timing with symmetrical ON & OFF times. The cycle starts with an ON time first. The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
The time delay can be reset by closing control input Y1-Z2. Opening control input Y1-Z2 starts the timer pulsing again with symmetrical ON & OFF times.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted flashing time

Flasher with reset, starting with the OFF time (Recycling equal times with reset, OFF first) CT-MFS, CT-MBS

Applying control supply voltage starts timing with symmetrical ON & OFF times. The cycle starts with an OFF time first. The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
The time delay can be reset by closing control input Y1-Z2. Opening control input Y1-Z2 starts the timer pulsing again with symmetrical ON & OFF times.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

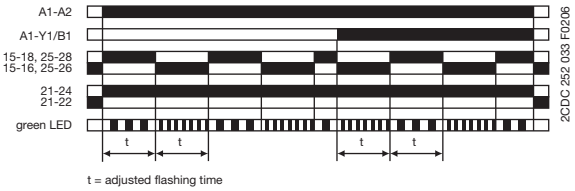


t = adjusted flashing time

CT-S range
Function diagrams

Flasher, starting with the ON or OFF time (Recycling equal times, ON or OFF first) CT-MVS

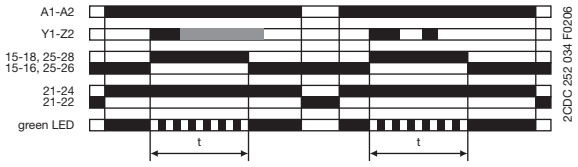
Applying control supply voltage starts timing with symmetrical ON & OFF times. The cycle starts with an ON time first. Closing control input A1-Y1/B1, with control supply voltage applied, starts the cycle with an OFF time first. The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted flashing time

Pulse former (Single shot) CT-MFS, CT-MBS

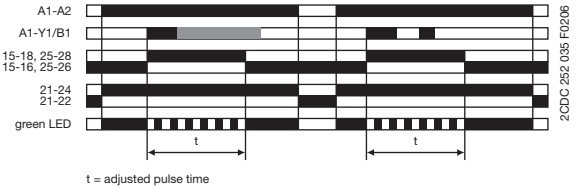
This function requires continuous control supply voltage for timing.
Closing control input Y1-Z2 energizes the output relay immediately and starts timing. Operating the control contact switch Y1-Z2 during the time delay has no effect. The green LED flashes during timing. When the selected ON time is complete, the output relay de-energizes and the flashing green LED turns steady. After the ON time is complete, it can be restarted by closing control input Y1-Z2.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted pulse time

Pulse former (Single shot) CT-MVS

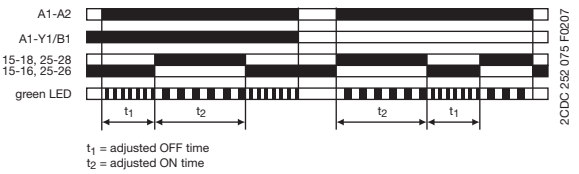
This function requires continuous control supply voltage for timing.
Closing control input A1-Y1/B1 energizes the output relay immediately and starts timing. Operating the control contact switch A1-Y1/B1 during the time delay has no effect. The green LED flashes during timing. When the selected ON time is complete, the output relay de-energizes and the flashing green LED turns steady. After the ON time is complete, it can be restarted by closing control input A1-Y1/B1.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t = adjusted pulse time

Pulse generator, starting with the ON or OFF time (Recycling unequal times, ON or OFF first) CT-MXS

This function requires continuous control supply voltage for timing.
Applying control supply voltage, with open control input A1-Y1/B1, starts timing with an ON time t_2 first. Applying control supply voltage, with closed control input A1-Y1/B1, starts timing with an OFF time t_1 first. The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
The ON & OFF times are independently adjustable.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

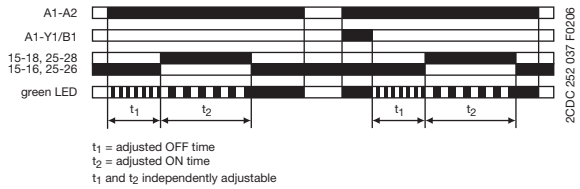


t_1 = adjusted OFF time
t_2 = adjusted ON time

CT-S range
Function diagrams

Single-pulse generator, starting with the OFF time (Delay on make with interval output) CT-MXS

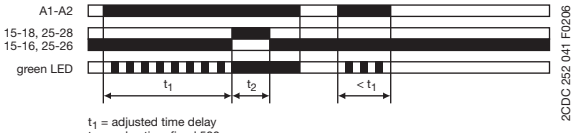
This function requires continuous control supply voltage for timing.
Applying control supply voltage, or, if control supply voltage is already applied, opening control input A1-Y1/B1 energizes the output relay after the OFF time t_1 is complete. When the following ON time t_2 is complete, the output relay de-energizes.
The ON & OFF times are displayed by the flashing green LED, which flashes twice as fast during the OFF time.
The ON & OFF times are independently adjustable.
Closing control input A1-Y1/B1, with control supply voltage applied, de-energizes the output relay and resets the time delay.
If control supply voltage is interrupted, the output relay de-energizes and the time delay is reset.



t_1 = adjusted OFF time
t_2 = adjusted ON time
t_1 and t_2 independently adjustable

Fixed impulse with adjustable time delay (Delayed pulse output) CT-WBS

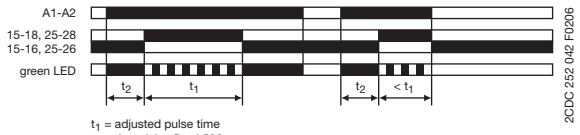
This function requires continuous control supply voltage for timing.
The time delay t_1 starts when control supply voltage is applied. The green LED flashes during timing. When t_1 is complete, the output relay energizes for the fixed impulse time t_2 of 500 ms and the flashing green LED turns steady.
If control supply voltage is interrupted, the time delay is reset. The output relay does not change state.



t_1 = adjusted time delay
t_2 = pulse time fixed 500 ms

Adjustable impulse with fixed time delay (Delayed Interval) CT-WBS

This function requires continuous control supply voltage for timing.
Applying control supply voltage starts the fixed time delay t_2 of 500 ms. When t_2 is complete, the output relay energizes and the selected pulse time t_1 starts. The green LED flashes during timing. When t_1 is complete, the output relay de-energizes and the flashing green LED turns steady.
If control supply voltage is interrupted, the pulse time is reset. The output relay does not change state.

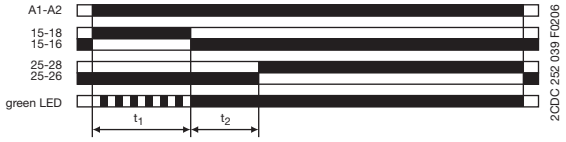


t_1 = adjusted pulse time
t_2 = time delay fixed 500 ms

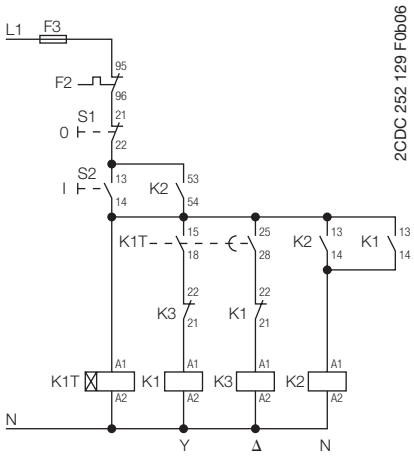
CT-S range
Function diagrams

Star-delta change-over with impulse function (Star-delta starting, interval/delay on make) CT-MFS, CT-MBS, CT-MVS.2x

This function requires continuous control supply voltage for timing. Applying control supply voltage to terminals A1-A2, energizes the star contactor connected to terminals 15-18 and begins the set starting time t_1. The green LED flashes during timing. When the starting time is complete, the first c/o contact de-energizes the star contactor.
Now, the fixed transition time t_2 of 50 ms starts. When the transition time is complete, the second c/o contact energizes the delta contactor connected to terminals 25-28. The delta contactor remains energized as long as control supply voltage is applied to the unit.



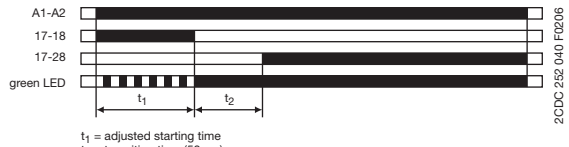
t_1 = adjusted starting time
t_2 = transition time (50 ms)



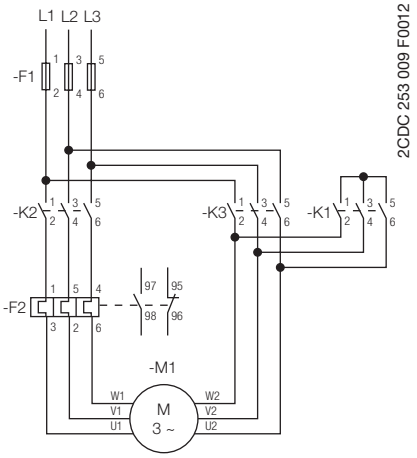
Control circuit diagram

Star-delta change-over (Star-delta starting) CT-SDS

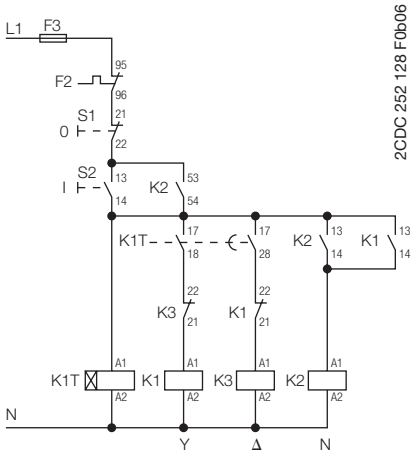
This function requires continuous control supply voltage for timing. Applying control supply voltage to terminals A1-A2, energizes the star contactor connected to terminals 17-18 and begins the set starting time t_1. The green LED flashes during timing. When the starting time is complete, the first output contact de-energizes the star contactor.
Now, the fixed transition time t_2 of 50 ms starts. When the transition time is complete, the second output contact energizes the delta contactor connected to terminals 17-28. The delta contactor remains energized as long as control supply voltage is applied to the unit.



t_1 = adjusted starting time
t_2 = transition time (50 ms)



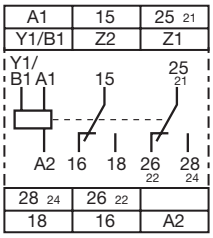
Power circuit diagram



Control circuit diagram

CT-S range
Connection diagrams

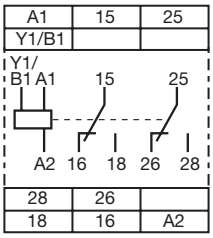
CT-MVS.21



2CDC 252 002 F0b06

A1-A2 Supply: 24-240 V AC/DC
A1-Y1/B1 Control input
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact
Z1-Z2 Remote potentiometer connection

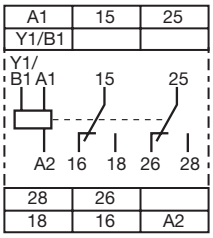
CT-MVS.22



2CDC 252 003 F0b06

A1-A2 Supply: 224-48 V DC or 24-240 V AC
A1-Y1/B1 Control input
15-16/18 1. c/o contact
25-26/28 2. c/o contact

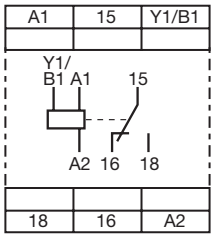
CT-MVS.23



2CDC 252 003 F0b06

A1-A2 Supply: 380-440V AC
A1-Y1/B1 Control input
15-16/18 1. c/o contact
25-26/28 2. c/o contact

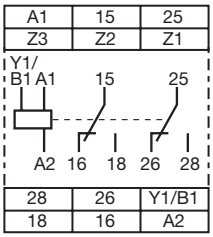
CT-MVS.12



2CDC 252 004 F0b06

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

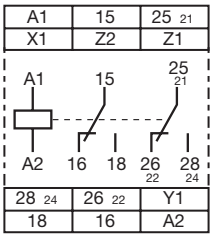
CT-MXS.22



2CDC 252 005 F0b06

A1-A2 Supply: 24-48 V DC or 24-240 V AC
A1-Y1/B1 Control input
15-16/18 1. c/o contact
25-26/28 2. c/o contact
Z1-Z2 Remote potentiometer connection
Z3-Z2 Remote potentiometer connection

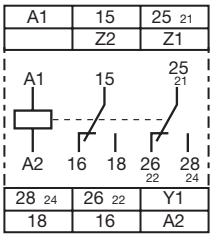
CT-MFS.21



2CDC 252 006 F0b06

A1-A2 Supply: 24-240 V AC/DC
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact
Y1-Z2 Control input
X1-Z2 Control input
Z1-Z2 Remote potentiometer connection

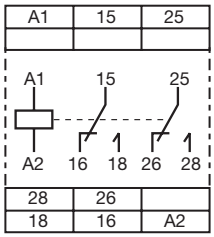
CT-MBS.22



2CDC 252 007 F0b06

A1-A2 Supply: 24-48 V DC or 24-240 V AC
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact
Y1-Z2 Control input
Z1-Z2 Remote potentiometer connection

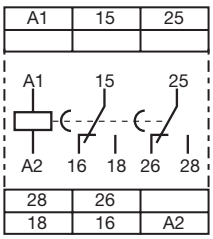
CT-WBS.22



2CDC 252 008 F0b06

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

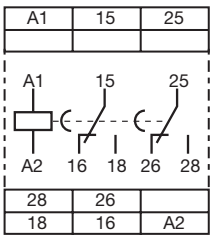
✉ CT-ERS.21



2CDC 252 009 F0b06

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

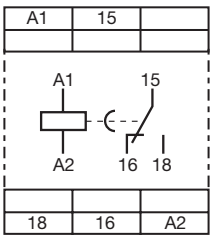
✉ CT-ERS.22



2CDC 252 009 F0b06

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

✉ CT-ERS.12

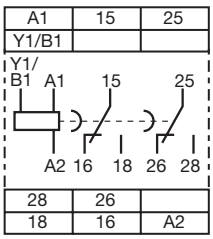


2CDC 252 010 F0b06

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

CT-S range
Connection diagrams

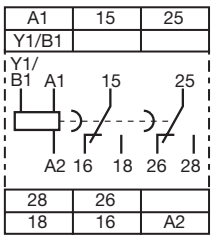
CT-APS.21



2CDC 252 011 F0b06

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

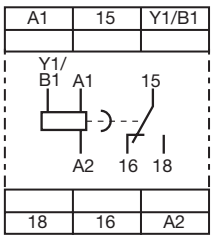
CT-APS.22



2CDC 252 011 F0b06

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

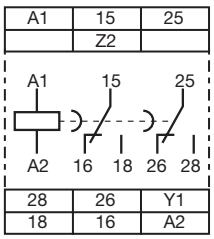
CT-APS.12



2CDC 252 012 F0b06

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

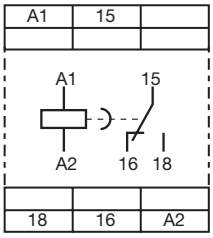
CT-AHS.22



2CDC 252 013 F0b06

A1-A2 Supply: 24-48 V DC or 24-240 V AC
Y1-Z2 Control input
15-16/18 1. c/o contact
25-26/28 2. c/o contact

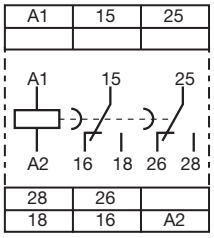
CT-ARS.11



2CDC 252 014 F0b06

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

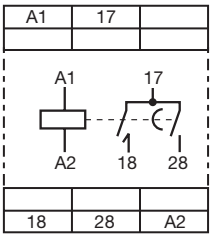
CT-ARS.21



2CDC 252 015 F0b06

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

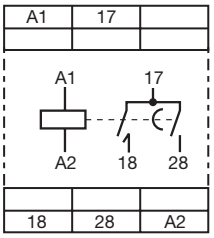
⚠ CT-SDS.22



2CDC 252 016 F0b06

A1-A2 Supply: 24-48 V DC or 24-240 V AC
17-18 1. n/o contact
17-28 2. n/o contact

⚠ CT-SDS.23



2CDC 252 016 F0b06

A1-A2 Supply: 380-440 V AC
17-18 1. n/o contact
17-28 2. n/o contact

CT-S range
Technical data

1

Data at T_a = 25 °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
	CT-xxx.x4	110-240 V AC
	CT-xxx.x5	220-240 V AC
	CT-xxx.x6	24 V AC/DC
	CT-xxx.x7	100-127 V AC or 110 V DC
	CT-xxx.x8	200-240V 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 current / power consumption		depending on device, see data sheet
Power failure buffering time	24 V DC	min. 15 ms
	230/400 V AC	min. 20 ms
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 kΩ (CT-MFS, CT-MBS, CT-MVS.21, CT-MXS)
	Z3-Z2	50 kΩ (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		Δt < 0.004 % / V
Accuracy within the temperature range		Δt < 0.03 % / °C
Repeat accuracy (constant parameters)		< ±0.2 %
Star-delta transition time		fixed 50 ms (CT-SDS, CT-MBS, CT-MFS, CT-MVS.2x)
Star-delta transition time tolerance		±2 ms
Minimum energizing time		100 ms (CT-ARS)
Formatting time [1]		5 min (CT-ARS)

[1] prior to first commisioning and after a six-month stop in operation

CT-S range
Technical data

Indication of operational states		
Control supply voltage / timing	U/T: green LED	⎍: control supply voltage applied / ⎍⎍: timing
Control supply voltage	U: green LED	⎍: control supply voltage applied
Relay state	R, R1, R2: yellow LED	⎍: output relay energized
Output circuit		
Kind of output	15-16/18	relay, 1 c/o contact
	15-16/18; 25-26/28	relay, 2 c/o contacts
	15-16/18; 25(21)-26(22)/28(24)	relay, 2 c/o contacts, 2nd c/o contact selectable as inst. contact
	17-18; 17-28	relay, 2 n/o contacts (CT-SDS)
Contact material		Cd-free, on request
Rated operational voltage U_e	IEC/EN 60947-1	250 V
Minimum switching voltage / minimum switching current		12 V / 10 mA
Maximum switching voltage / maximum switching current		see load limit curves
Rated operational current I_e (IEC/EN 60947-5-1)	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 (CT-ARS; 1.5 A)
AC rating (UL 508)	Utilization category (Control Circuit Rating Code)	B 300
	max. rated operational voltage	300 V AC
	Maximum continuous thermal current at B300	5 A
	max. making/breaking apparent power at B300	3600 VA / 360 VA
Mechanical lifetime		30 x 10^6 switching cycles
Electrical lifetime	at AC-12, 230 V, 4 A	0.1 x 10^6 switching cycles
Max. fuse rating to achieve short-circuit protection (IEC/EN 60947-5-1)	n/c contact	6 A fast-acting
	n/o contact	10 A fast-acting
General data [2]		
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		depending on device, see ordering details
Mounting		DIN rail (IEC/EN 60715), snap-on mounting without any tool
Mounting position		any
Minimum distance to other units	vertical / horizontal	not necessary / not necessary
Material of housing		UL 94 V-0
Degree of protection	housing / terminals	IP50 / IP20

Electrical connection [2]

		Screw connection technology	Easy Connect Technology (Push-in)
Wire size	fine-strand with(out) wire end ferrule	1 x 0.5-2.5 mm² (1 x 20-14 AWG) 2 x 0.5-1.5 mm² (2 x 20-16 AWG)	2 x 0.5-1.5 mm² (2 x 20-16 AWG)
	rigid	1 x 0.5-4 mm² (1 x 20-12 AWG) 2 x 0.5-2.5 mm² (2 x 20-14 AWG)	2 x 0.5-1.5 mm² (2 x 20-16 AWG)
Stripping length		8 mm (0.32 in)	
Tightening torque		0.6-0.8 Nm (5.31-7.08 lb.in)	-

[2] Data for all references 1SVR 730 xxx xxx and 1SVR 740 xxx xxx. For devices with 1SVR 430 xxx xxx please refer to the data sheet.

CT-S range
Technical data

1

Environmental data			
Ambient temperature ranges	operation / storage	-25...+60 °C / -40...+85 °C, -40...+60 °C / -40...+85 °C (CT-MVS.21, CT-MFS.21, CT-ERS.21, CT-APS.21)	
Damp heat (cyclic) (IEC/EN 60068-2-30)		6 x 24 h cycle, 55 °C, 95 % RH	
Vibration, sinusoidal (IEC/EN 60068-2-6)	functioning	40 m/s², 10-58/60-150 Hz	
	resistance	60 m/s², 10-58/60-150 Hz, 20 cycles	
Vibration, seismic (IEC/EN 60068-3-3)	functioning	20 m/s²	
Shock, half-sine (IEC/EN 60068-2-27)	functioning	100 m/s², 11 ms, 3 shocks/direction	
	resistance	300 m/s² , 11 ms, 3 shocks/direction	
Isolation data		**CT-S with 1 c/o**	**CT-S with 2 c/o**
Rated insulation voltage U_i	input circuit / output circuit	500 V	
	output circuit 1 / output circuit 2	not available	300 V
Rated impulse withstand voltage U_{imp} between all isolated circuits	IEC/EN 60664-1	type test: 4 kV; 1.2/50 µs	
Power-frequency withstand voltage (test voltage) between all isolated circuits		routine test: 2.0 kV; 50 Hz; 1 s type test: 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	IEC/EN 60664-1	3	
Overvoltage category	IEC/EN 60664-1	III	
Standards			
Product standard		IEC 61812-1, EN 61812-1 + A11, DIN VDE 0435 part 2021	
Low Voltage Directive		2006/95/EC	
EMC Directive		2004/108/EC	
RoHS Directive		2011/65/EC	
Electromagnetic compatibility			
Interference immunity to		IEC/EN 61000-6-1, 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, IEC/EN 61000-6-4	
high-frequency radiated	IEC/CISPR 22, EN 55022	Class B	
high-frequency conducted	IEC/CISPR 22, EN 55022	Class B	

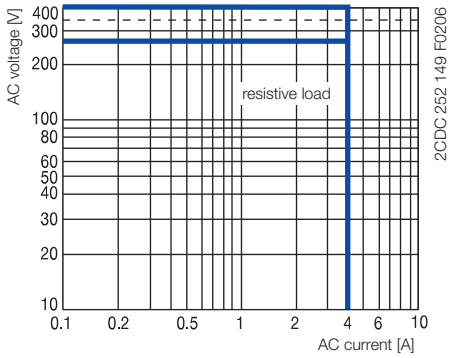
„Approvals and marks“ see page 1/4.

CT-S range
Technical diagrams

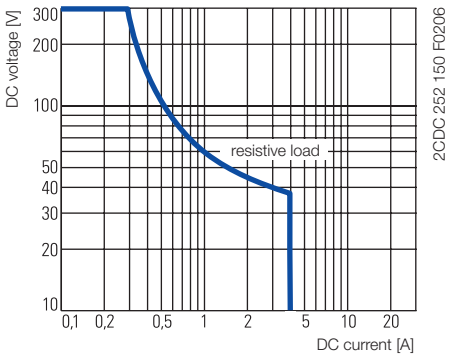
Technical diagrams

Load limit curves

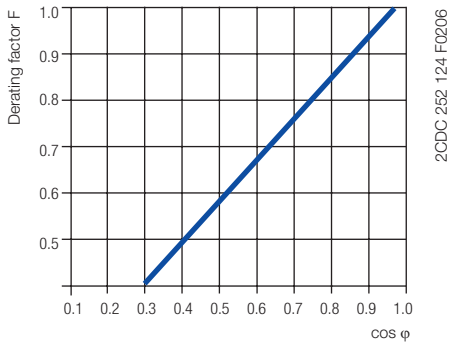
AC load (resistive)



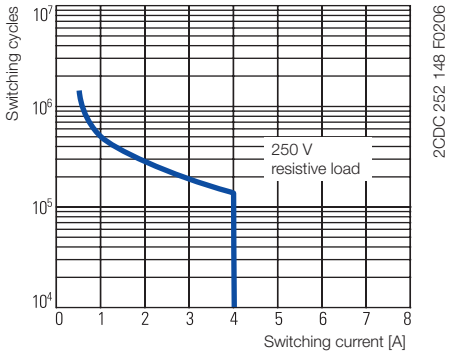
DC load (resistive)



Derating factor F for inductive AC load



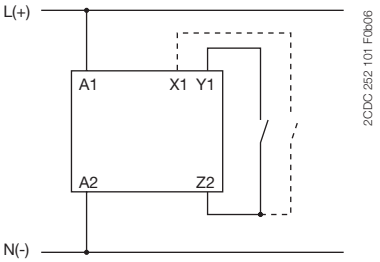
Contact lifetime



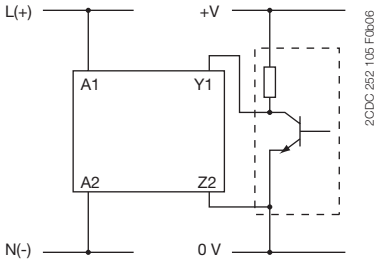
CT-S range
Wiring notes, Dimensional drawings

Wiring notes

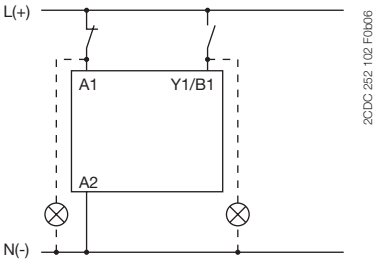
Control inputs (volt-free triggering)

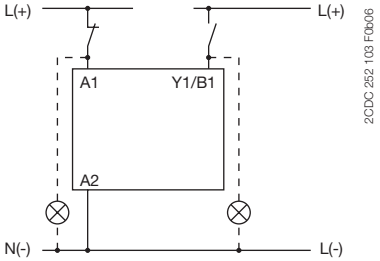


Triggering of the control inputs (volt-free) with a proximity switch (3 wire)



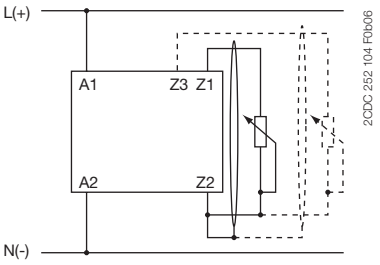
Control inputs (voltage-related triggering)



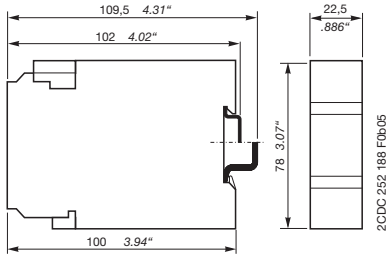


The control input Y1/B1 is triggered with electric potential against A2. It is possible to use the control supply voltage from terminal A1 or any other voltage within the rated control supply voltage range.

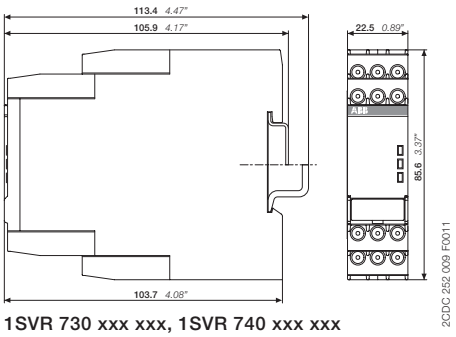
Remote potentiometer



Dimensional drawing Dimensions in mm



1SVR 430 xxx xxx



1SVR 730 xxx xxx, 1SVR 740 xxx xxx

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