Electronic timers
Product group picture

1

Electronic timers
Table of Contents

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, CT-VBS
⊠■	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	
1⎍	Pulse former	CT-MFD		CT-MFE		CT-MVS, CT-MFS, CT-MBS	
△	Star-delta change-over		CT-SDD, CT-SAD				CT-SDS
△1⎍	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	
▭	Switching relay				CT-IRE		CT-IRS

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 contacts 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	■	■	■	■	■	■	■	■	■	■	■	■							
	GOST	■	■	■	■	■	■	■	■	■	■	■	■							
	CB scheme	■	■	■	■	■	■	■	■	■	■	■	■							
	CCC	■	■	■	■	■	■	■	■	■	■	■	■							
Marks																				
CE	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-IRE		CT-MKE	CT-EKE	CT-AKE					
	UL 508, CAN/CSA C22.2 No.14	■	■	■	■	■	■	■	■	■	■		■	■	■					
	GL	■	■	■	■	■	■	■	■	■	■		■	■	■					
	GOST	■	■	■	■	■	■	■	■	■	■		■	■	■					
	CB scheme	■	■	■	■	■	■	■	■	■	■									
	CCC	■	■	■	■	■	■	■	■	■	■									
	RMRS	■	■	■	■	■	■	■	■	■	■		■	■	■					
Marks																				
CE	CE	■	■	■	■	■	■	■	■	■	■		■	■	■					
	C-Tick	■	■	■	■	■	■	■	■	■	■		■	■	■					

■ existing
□ pending

Approvals		CT-S																		
		CT-MVS.12	CT-MVS.2x	CT-MXS.22	CT-MFS.21	CT-MBS.22	CT-WBS.22	CT-ERS.12	CT-ERS.2x	CT-APS.12	CT-APS.2x	CT-AHS.22	CT-ARS.11	CT-ARS.21	CT-VBS.1x	CT-SDS.2x		CT-IRS.1x	CT-IRS.2x	CT-IRS.3x
	UL 508, CAN/CSA C22.2 No.14	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
	GL	■	■	■	■	■	■	■	■	■	■	■	□	□		■				
	GOST	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■
	CB scheme	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■
	CCC	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■
Marks																				
CE	CE	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■
	C-Tick	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■

CT-D range
Product group picture

1

CT-D range
Table of Contents

CT-D range
Benefits and advantages

1

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 0.05s to 100 h or 4 time ranges from 0.05 s - 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 depending)

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

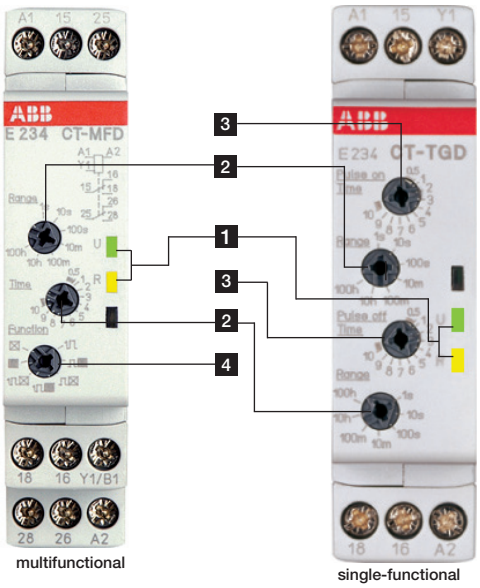
The CT-D range timers allow an output load of up to 6 A on devices with 1 c/o contact and up to 5 A on devices with 2 c/o contacts.

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

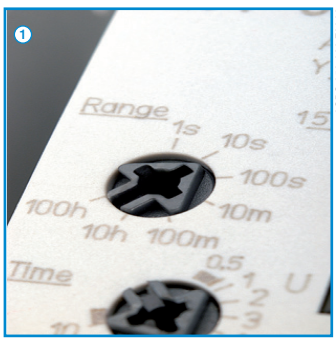
timing

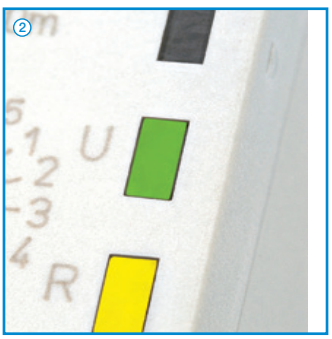
R, R1, R2 - yellow LED:
output relay energized

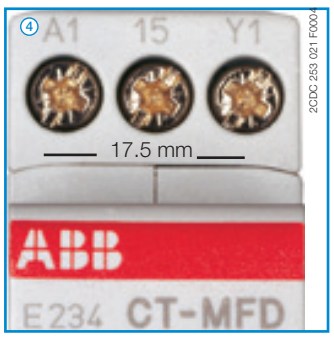
2 Time range adjustment

3 Fine adjustment of the time delay

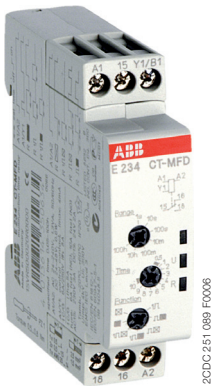
4 Preselection of the timing function







CT-D range
Ordering details



CT-MFD.12

CT-ERD.22

⊠ ON-delay
■ OFF-delay
1⎍⊠ Impulse-ON
1⎍■ Impulse-OFF
⎍⊠ Flasher starting with ON
⎍■ Flasher staring with OFF
⎍⎍ Pulse former
■⎍ Pulse generator
⚠ Star-delta change-over

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.

Ordering details

Time function	Rated control supply voltage	Time ranges	Control input	Out-put	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
⊠ ■ 1⎍⊠ 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)
⊠ ■ 1⎍⊠ 1⎍■ ⎍⊠ ⎍■ ⎍⎍	12-240 V AC/DC	7 (0.05 s - 100 h)	■	2 c/o	CT-MFD.21	1SVR500020R1100		0.065 (0.143)
⊠	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)
■			■	1 c/o	CT-AHD.12	1SVR500110R0000		0.060 (0.132)
■			■	2 c/o	CT-AHD.22	1SVR500110R0100		0.065 (0.143)
1⎍⊠				1 c/o	CT-VWD.12	1SVR500130R0000		0.060 (0.132)
⎍⊠				1 c/o	CT-EBD.12	1SVR500150R0000		
■⎍		2 x 7 (0.05 s - 100 h)	■	1 c/o	CT-TGD.12[1]	1SVR500160R0000		0.060 (0.132)
■⎍			■	1 c/o	CT-TGD.22[1]	1SVR500160R0100		0.065 (0.143)
⚠		4 (0.05 s - 10 min)		2 n/o	CT-SDD.22[2]	1SVR500211R0100		0.065 (0.143)
⚠				2 n/o	CT-SAD.22[3]	1SVR500210R0100		

[1] ON and OFF times adjustable independently: 2 x 7 time ranges 0.05 s - 100 h
[2] Transition time 50 ms fixed
[3] Transition time adjustable

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

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

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.

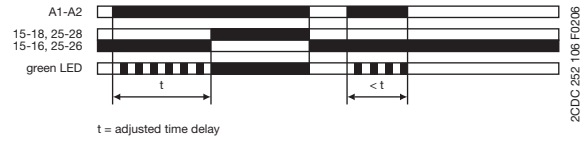
⊠ ON-delay (Delay on make) CT-ERD, CT-MFD

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

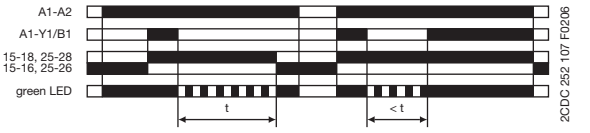
▬ OFF-delay with auxiliary voltage (Delay on break) CT-AHD, CT-MFD

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

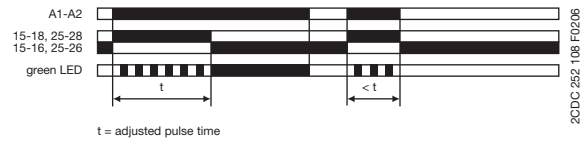
1⊓⊠ Impulse-ON (Interval) CT-VWD, CT-MFD

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

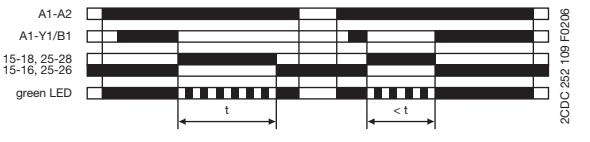
1⊓▬ Impulse-OFF with auxiliary voltage (Trailing edge interval) CT-MFD

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

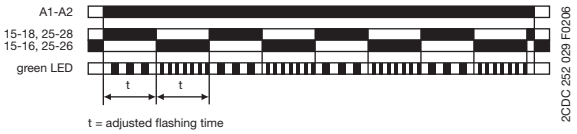
CT-D range
Function diagrams

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.



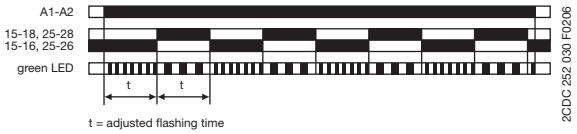
t = adjusted flashing time

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

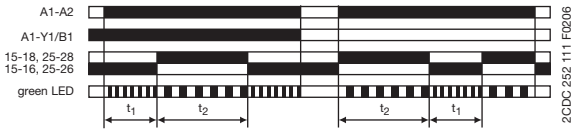
Pulse generator, starting with the ON or OFF time (Recycling unequal times, ON or OFF first) CT-TGD

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

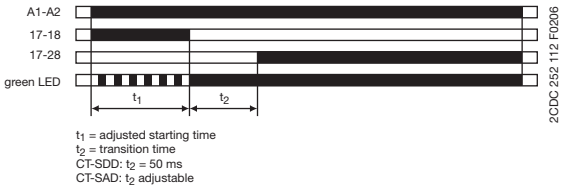
1

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

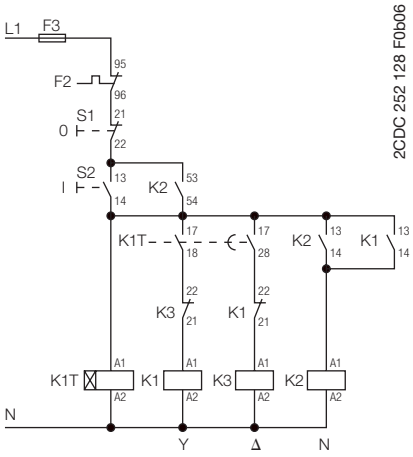
This function requires continuous control supply voltage for timing.

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.

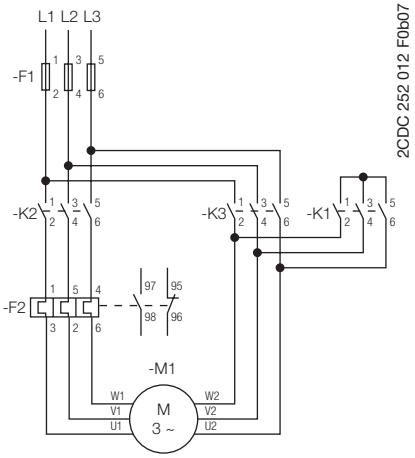
Now, the transition time t_2 starts. When the transition time is complete, the second output contact energizes the delta contactor connected to terminals **17-28**. The delta contactor remains energized as long as control supply voltage is applied to the unit.



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



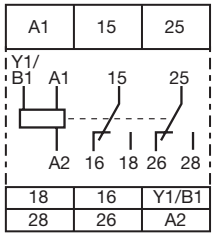
Control circuit diagram



Power circuit diagram

CT-D range
Connection diagrams

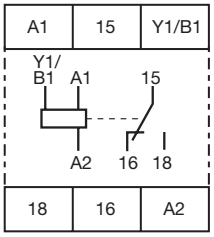
CT-MFD.21



2CDC 252 113 F0b06

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

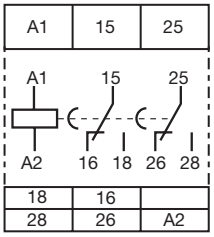
CT-MFD.12



2CDC 252 114 F0b06

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

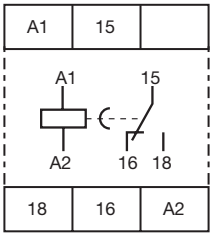
CT-ERD.22



2CDC 252 115 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

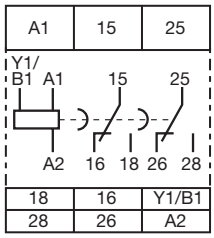
CT-ERD.12



2CDC 252 177 F0b05

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

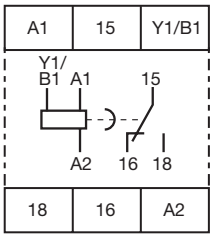
CT-AHD.22



2CDC 252 116 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
A1-Y1/B1 Control input

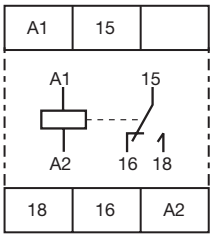
CT-AHD.12



2CDC 252 117 F0b06

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

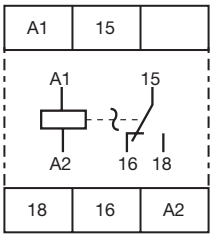
CT-VWD.12



2CDC 252 179 F0b05

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

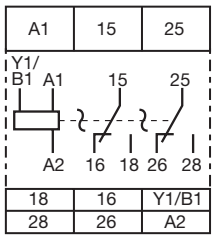
CT-EBD.12



2CDC 252 180 F0b05

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

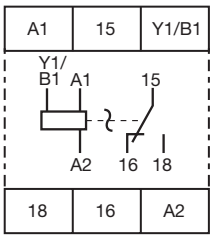
CT-TGD.22



2CDC 252 118 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
A1-Y1/B1 Control input

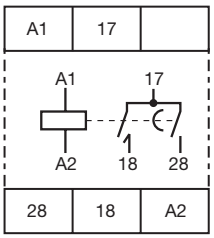
CT-TGD.12



2CDC 252 119 F0b06

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

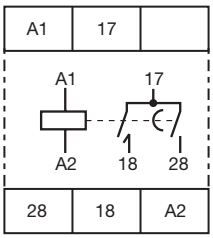
CT-SDD.22



2CDC 252 160 F0b06

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



2CDC 252 160 F0b06

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	AC/DC versions	DC or 50/60 Hz		
	AC versions	50/60 Hz		
Frequency range		DC or 47-63 Hz		
Typical current / power consumption		see data sheet		
Power failure buffering time		min. 20 ms	min. 30 ms	
Input circuit - Control circuit				
Kind of triggering		voltage-related triggering		
Control input, Control function	A1-Y1/B1	start timing external		
Parallel load / polarized		yes / yes		
Rated operational voltage U_e		250 V		
Minimum switching voltage / minimum switching current		12 V / 100 mA		
Maximum switching voltage / maximum switching current		see load limit curves		
Minimum control pulse length		30 ms		
Control voltage potential		see rated control supply voltage		
Current consumption of the control input		max. 4 mA	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 %		
Star-delta transition time	CT-SDD / CT-SAD	fixed 50 ms / adjustable: 20-100 ms in steps of 10 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 status	R: 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	
	17-18; 17-28	relay, 2 n/o contacts (CT-SDD, CT-SAD)		
Contact material		Cd-free, see data sheet		
Rated operational voltage U_e	IEC/EN 60947-1	250 V		
Minimum switching voltage / minimum switching current		12 V / 100 mA		
Maximum switching voltage / maximum switching current		see load limit curves		
Rated operational current I_e (IEC/EN 60947-5-1)	AC12 (resistive) at 230 V	6 A	5 A	
	AC15 (inductive) at 230 V	3 A	3 A	0.75 A (AC15 n/c contact)
	AC15 (inductive) at 230 V	6 A	5 A	
	DC13 (inductive) at 24 V	2 A	2 A [1)]	1 A
AC rating (UL 508)	Utilization category Rating Code)	B 300		C 300
	max. rated operational voltage	300 V AC		
	Maximum continuous thermal current at B300	5 A		2.5 A
	max. making/breaking apparent power at B300	3600 VA / 360 VA		1800 VA / 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		

CT-D range
Technical data

		CT-D with 1 c/o contact	CT-D with 2 c/o contacts	CT-MFD.21
General data				
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		
Environmental data				
Ambient temperature range	operation / storage	-20 ... +60 °C / -40 ... +85 °C		
Damp heat (cyclic)	IEC/EN 60068-2-30	6 x 24 h cycles, 55 °C, 95 % RH		
Vibration (sinusoidal)	IEC/EN 60068-2-6	40 m/s², 20 cycles, 10...150...10 Hz		
Shock (half-sine)	IEC/EN 60068-2-27	100 m/s², 11 ms		
Isolation data				
Rated impulse withstand voltage U_{imp} between all isolated circuits	VDE 0110, IEC/EN 60664-1	4 kV; 1.2/50 µs		
Pollution category	IEC/EN 60664-1, VDE 0110	3		
Overvoltage category	IEC/EN 60664-1, VDE 0110	III		
Rated insulation voltage U_i	input circuit / output circuit	300 V		
	output circuit 1 / output circuit 2	300 V		
Basic insulation (IEC/EN 61140)	input circuit / output circuit	300 V		
Protective separation (VDE 0106 part 101 and part 101/A1; IEC/EN 61140)	input circuit / output circuit	250 V		
Power-frequency withstand voltage test (test voltage, routine test)	between all isolated circuits	2.5 kV, 50 Hz, 1 s		
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		2002/95/EC		
Electromagnetic compatibility				
Interference immunity to		IEC/EN 61000-6-1, IEC/EN 61000-6-2		
electronic discharge	IEC/EN 61000-4-2	Level 3 (6 kV / 8 kV)		
radiated, radio-frequency. electromagnetic filed	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		
conducted disturbances, induced by radio-frequency fi elds	IEC/EN 61000-4-6	Level 3 (10 V)		
Interference emissions		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		

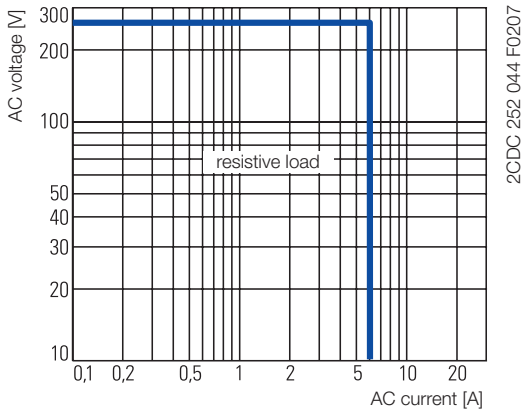
„Approvals and Marks“ see page 1/4.

CT-D range
Technical data, Technical diagrams

Technical diagrams

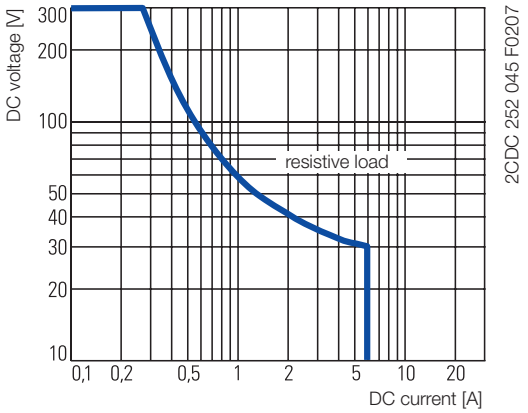
Load limit curves

AC load (resistive)

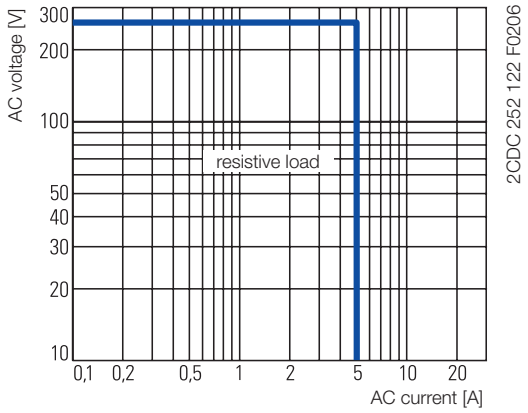


CT-D.1x

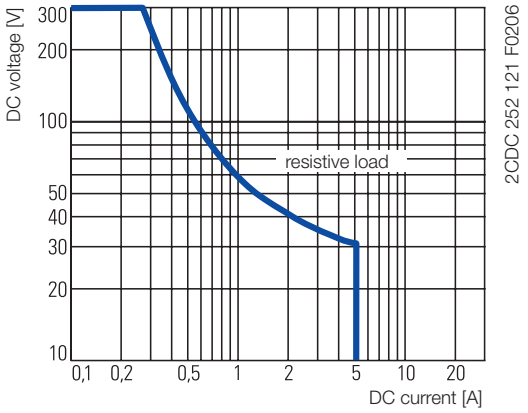
DC load (resistive)



CT-D.1x

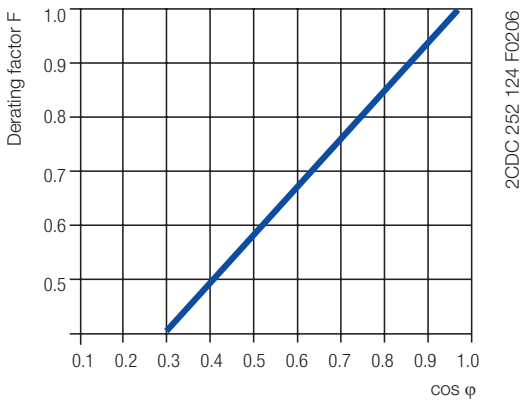


CT-D.2x

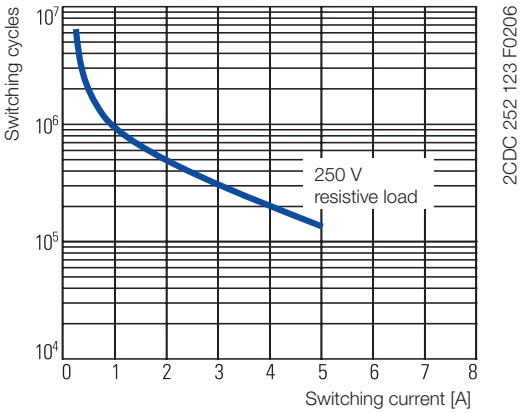


CT-D.2x

Derating factor F
for inductive AC load



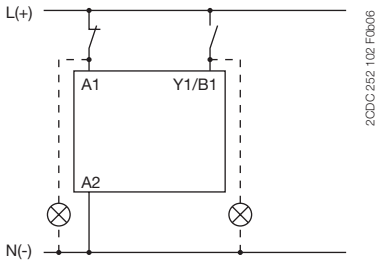
Contact lifetime



CT-D range
Wiring notes, Dimensional drawings

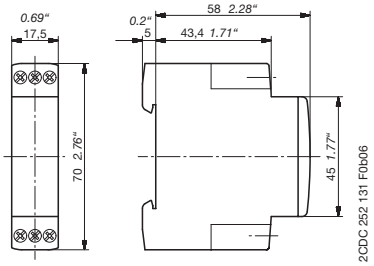
Wiring notes for devices with control input

A parallel load to the control input is possible

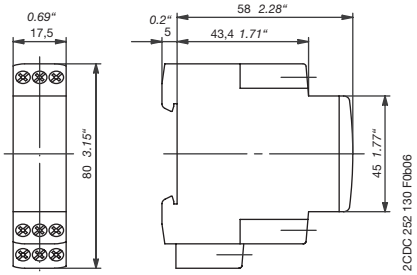


Dimensional drawings

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
Benefits and advantages

1

Characteristics

- Diversity:
  - 2 multifunction timers
  - 56 single-function timers
  - 4 switching relays
- 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)
- Switching relay CT-IRE for added switching contacts with either side-by-side or diagonally positioned connection terminals

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

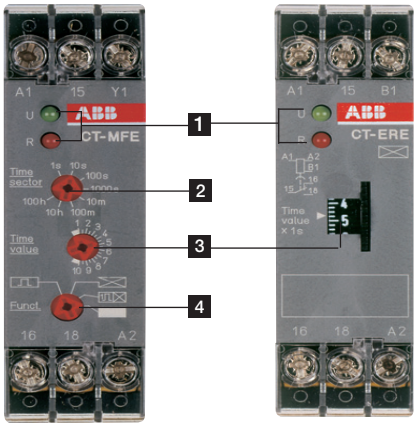
All actual operational states are displayed by front-face LEDs, thus simplifying commissioning and troubleshooting.

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.



Operating controls

1 LEDs for status indication

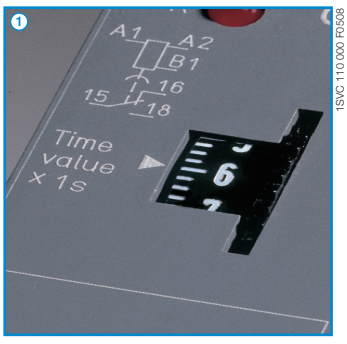
U - green LED: ⌐¬ control supply voltage applied

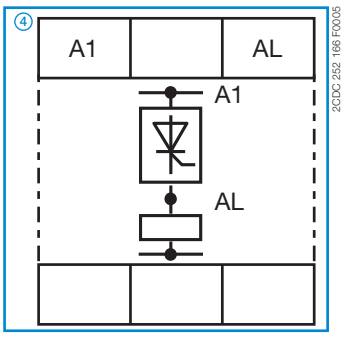
R2: red LED: ⌐¬ output relay energized

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

CT-MFE

CT-AHE

Description

The CT-E range with its excellent price/performance ratio offers an ideal solution for serial applications. 56 singlefunction 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.

Ordering details

Time function	Rated control supply voltage	Time ranges	Control Input	Output	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
⊠ ■ 1⎍⊠ ⎍■ ⎍⊠ ⎍⎍	24-240 V AC/DC	8 (0.05 s - 100 h)	■	1 c/o	CT-MFE	1SVR550029R8100		0.08 (0.18)
⊠	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		
■	24 V AC/DC	0.1-10 s	■	1 c/o	CT-AHE [2]	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		
■ [1]	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		
1⎍⊠	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		
1⎍■ [1]	24 V AC/DC	0.05-1 s	■	1 c/o	CT-AWE	1SVR55015 R3100		0.08 (0.18)
	110-130 V AC					1SVR550150 R3100		
	220-240 V AC					1SVR550151R3100		

[1] without auxiliary voltage, True Off-delay timer
[2] with control input

⊠ ON-delay
■ OFF-delay
1⎍⊠ Impulse-ON
1⎍■ Impulse-OFF
⎍⊠ Flasher starting with ON
⎍■ Flasher staring with OFF
⎍⎍ Pulse former

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-E range
Ordering details

CT-AWE

CT-IRE

Ordering details

Time function	Rated control supply voltage	Time ranges	Control Input	Output	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
1⎍■	24 V AC/DC	0.1-10 s	■	1 c/o	CT-AWE [2]	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		
⎍■	24 V AC/DC, 220-240 V AC	0.1-10 s		1 c/o	CT-EBE [7]	1SVR550167R1100		0.08 (0.18)
	110-130 V AC					1SVR550160R1100		
◬⊠	24 V AC/DC, 220-240 V AC	0.1-10 s		1 c/o	CT-YDE [1]	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		
◬1⎍	24 V AC/DC, 220-240 V AC	0.3-30 s		1 n/o + 1 n/c	CT-SDE [3] [8]	1SVR550217R4100		0.08 (0.18)
	110-130 V AC					1SVR550210R4100		
	380-415 V AC					1SVR550212R4100		
⊠ 1⎍⊠ ⎍⊠ ⎍■	24-240 V AC/DC	0.1-10 s, 3-300 s			CT-MKE [6] [9]	1SVR550019R0000		0.08 (0.18)
⊠	24-240 V AC/DC	0.1-10 s		solide-state	CT-EKE	1SVR550509R1000		0.08 (0.18)
		0.3-30 s				1SVR550509R4000		
		3-300 s				1SVR550509R2000		
■	24-240 V AC	0.1-10 s			CT-AKE	1SVR550519R1000		0.08 (0.18)
		0.3-30 s				1SVR550519R4000		
		3-300 s				1SVR550519R2000		
▭	24 V AC/DC			1 c/o	CT-IRE [4]	1SVR550228R9100		0.08 (0.18)
	220-240 V AC/DC					1SVR550221R9100		
▭	24 V AC/DC			1 c/o	CT-IRE [5]	1SVR550238R9100		0.08 (0.18)
	220-240 V AC/DC					1SVR550231R9100		

⊠ ON-delay
■ OFF-delay
1⎍⊠ Impulse-ON
1⎍■ Impulse-OFF
⎍⊠ Flasher starting with ON
⎍■ Flasher staring with OFF
1⎍ Pulse former
▭ Switching relay
◬⊠ 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 control input
[3] with fixed transition time
[4] A1/A2 diagonally
[5] A1/A2 on top
[6] solid-state output, functions and time range selection via external jumpers
[7] symetric ON & OFF times
[8] common contact
[9] Functions: ON-delay (AC/DC), Impuls-ON (AC only), Flasher starting with OFF (AC only)

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.

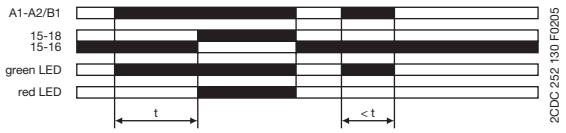
⊠ ON-delay (Delay on make) CT-ERE, CT-MFE

Timing begins when control supply voltage is applied. 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.

Control input **A1-Y1** of the CT-MFE is disabled when this function is selected.



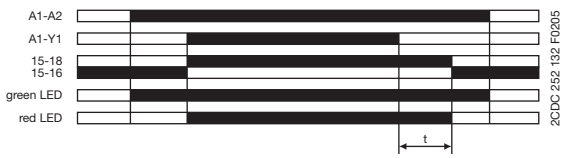
t = adjusted time delay

▬ 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 a control input, connected to terminals **A1-Y1**. If the control contact 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** closes 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

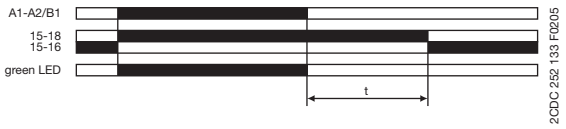
OFF-delay, without auxiliary voltage (true delay on break) CT-ARE

The OFF-delay function without auxiliary voltage does not require 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

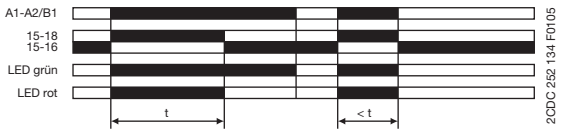
Impulse-ON (Interval) CT-VWE, CT-MFE

The output relay energizes immediately when control supply voltage is applied and de-energizes when 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.

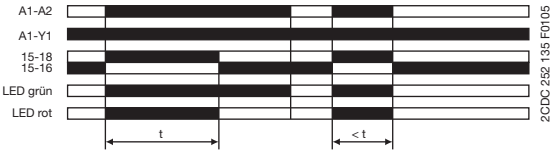
The control input **A1-Y1** of the CT-MFE has to be jumpered if this timing function is configured.

CT-VWE:



t = adjusted pulse time

CT-MFE:



t = adjusted pulse time

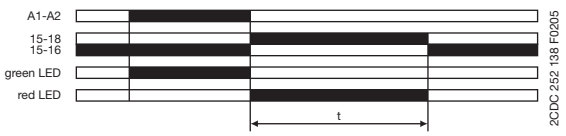
Impulse-OFF, without auxiliary voltage (True trailing edge interval) CT-AWE

The Impulse-OFF function without auxiliary voltage does not require 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.

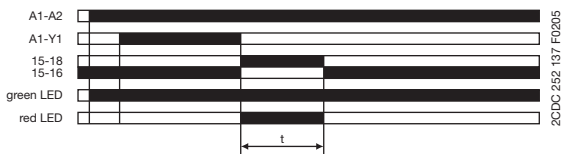


t = adjusted pulse time

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

This function requires continuous control supply voltage. Opening control input **A1-Y1**, energizes the output relay immediately 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** of the CT-MFE has to be open when this function is selected.

t = adjusted flashing time

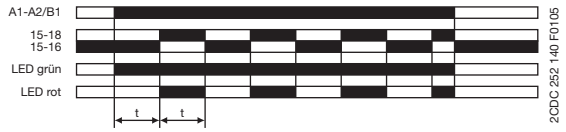
Flasher starting with OFF (Recycling equal times, OFF first) CT-EBE, CT-MFE

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.

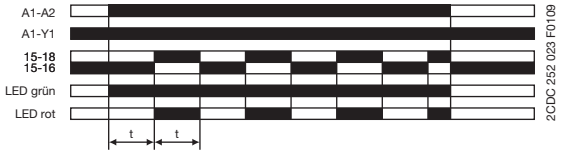
Control input **A1-Y1** of the CT-MFE has to be jumpered when this function is selected.

CT-EBE:



t = adjusted flashing time

CT-MFE:



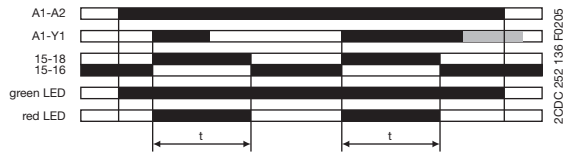
t = adjusted flashing time

Pulse former (Single shot) CT-MFE

Closing the control input connected to terminals **A1-Y1**, with control supply voltage applied, energizes the output relay for the selected ON time. When the ON time is complete, the output relay de-energizes. Operating the control input switch **A1-Y1** during the time delay has no effect.

After the time delay is complete, it can be restarted by 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

Switching relay CT-IRE

The switching relay may be used to increase the number of available contacts or to reinforce contacts, or as a coupling/decoupling interface.

Applying control supply voltage, energizes the output relay. The output relay de-energizes if supply voltage is interrupted.

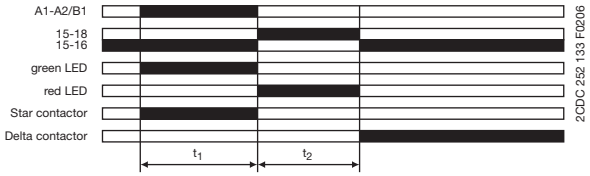
CT-E range
Function diagrams

Star-delta change-over
CT-YDE

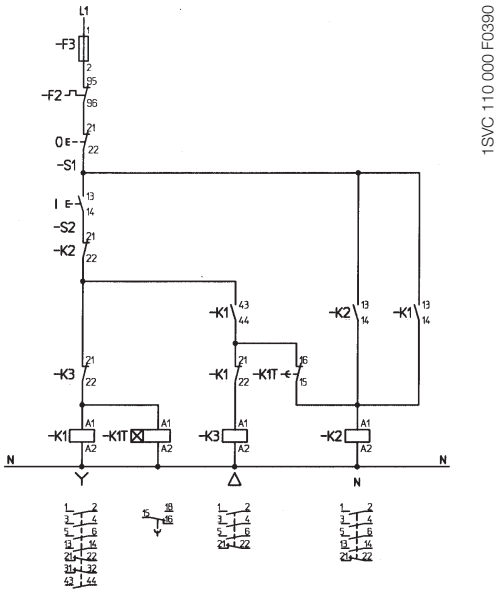
Applying control supply voltage, energizes the star contactor (K1) and the line contactor (K2) and begins the set starting time.

When the starting time is complete, contact **15-16** de-energizes the star contactor (K1) Now, the fixed transition time starts.

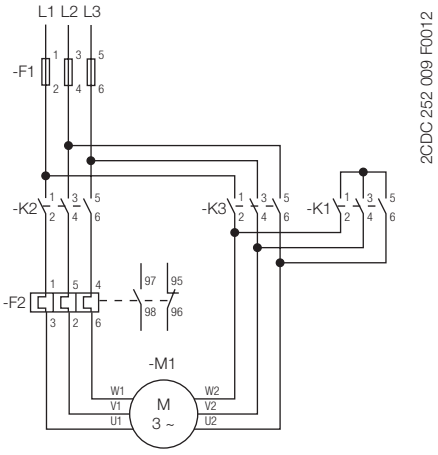
When the transition time is complete, contact **15-16** energizes the delta contactor (K3).



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



Control circuit diagram



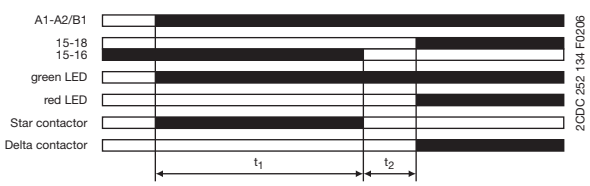
Power circuit diagram

Star-delta change-over
CT-SDE

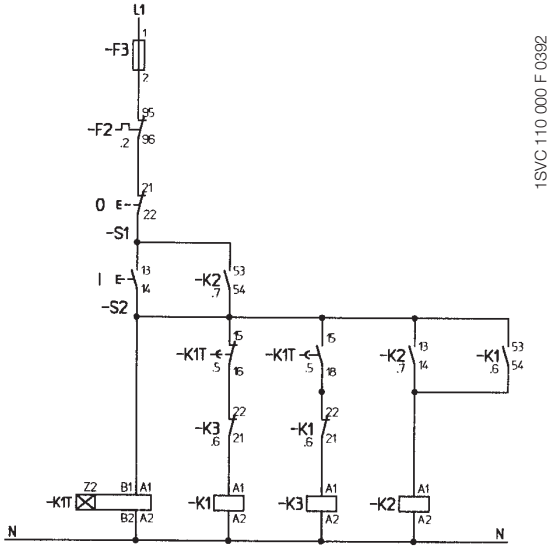
Applying control supply voltage, energizes the star contactor (K1) and the line contactor (K2) and begins the set starting time.

When the starting time is complete, contact **15-16** de-energizes the star contactor (K1). Now, the fixed 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.

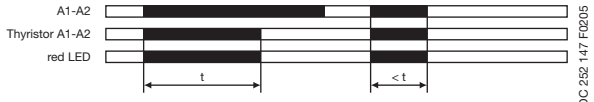
ON-delay (Delay on Make)

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 connected to **A1-A2** energizes. 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

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

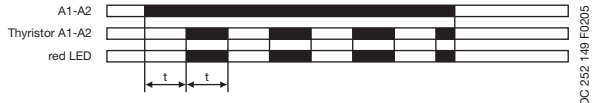
Flasher, starting with ON

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

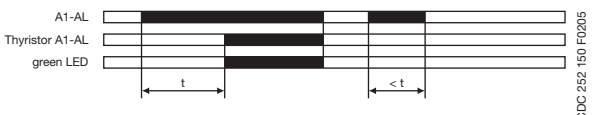
X_3-X_4 jumpered: 0,1-10 s X_3-X_4 open: 3-300 s

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 a control input, connected to terminals **Y2-A2**. When the control input closes, the load energizes. If the control input opens, 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** closes before the time delay is complete, the time delay is reset and the load remains energized. Timing starts again when the control input re-opens.

Interrupting control supply voltage resets the time delay and de-energizes the load.

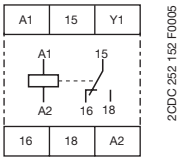
t = adjusted time delay

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

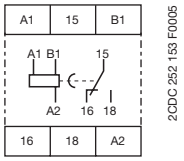
CT-MFE



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

A1-Y1 Control input
15-16/18 c/o contact

CT-ERE

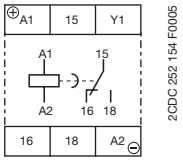


A1-A2 Supply: 220-240 V AC or 110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

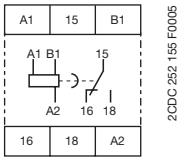
CT-AHE [1)]



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



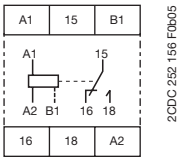
A1-A2 Supply: 220-240 V AC or 110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

---

1 CT-VWE

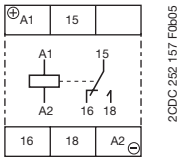


A1-A2 Supply: 220-240 V AC or 110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

1 CT-AWE

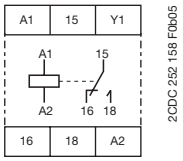


Device without aux. voltage

A1(+)-A2(-) Supply: 24 V AC/DC or 110-240 V AC or 220-240 V AC

15-16/18 c/o contact

1 CT-AWE [1)]

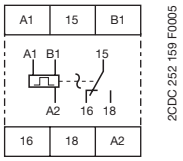


Device with aux. voltage

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

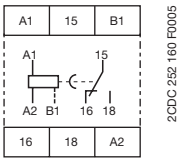


A1-A2 Supply: 220-240 V AC or 110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

CT-YDE

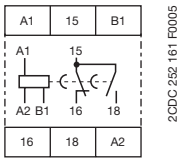


A1-A2 Supply: 220-240 V AC or 110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

CT-SDE



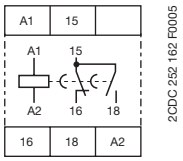
Device:
1SVR 550 217 R4100

A1-A2 Supply: 220-240 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

CT-SDE

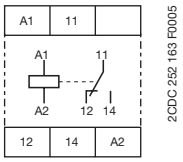


Devices:
1SVR 550 210 R4100, 1SVR 550 212 R4100

A1-A2 Supply: 110-130 V AC or 380-415 V AC

15-16/18 c/o contact

CT-IRE

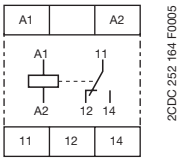


Supply terminals diagonally positioned

A1-A2 Supply: 24 V AC/DC or 220-240 V AC/DC

11-12/14 c/o contact

CT-IRE

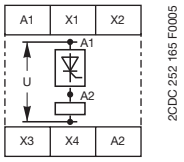


Supply terminals on one side of the device

A1-A2 Supply: 24 V AC/DC or 220-240 V AC/DC

11-12/14 c/o contact

CT-MKE



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

A1-A2 Thyristor

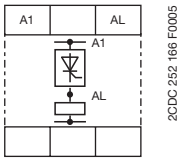
X1-X4 Timing function adjustment

X2-X4 Timing function adjustment

X3-X4 Time range adjustment

(Details see function diagrams)

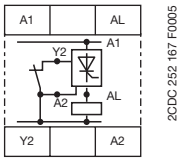
CT-EKE



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

A1-AL Thyristor

CT-AKE



A1-AL Supply: 24-240 V AC

A1-AL Thyristor

Y2-A2 Control input

[1)] Wiring notes 1/31

CT-E range
Technical data

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	-
Current consumption while timing		-	≤ 2 mA (24-60 V AC/DC) ≤ 8 mA (60-240 V AC/DC)
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-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	-
Minimum energizing time	CT-ARE	200 ms	-
Output circuit			
Kind of output	15-16/18	Relay, 1 c/o contact	-
	A1-A2. A1-AL	-	Thyristor
Contact material		AgCdO	-
Rated operational voltage U_e	VDE 0110, 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)	AC12 (resistive) at 230 V	4 A	-
	AC15 (inductive) at 230 V	3 A	-
	AC15 (inductive) at 230 V	4 A	-
	DC13 (inductive) at 24 V	2 A	-

[1] CT-MFE: yes / no

CT-E range
Technical data

1

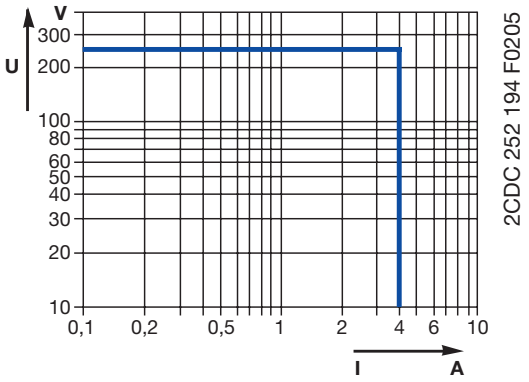
		CT-E (relays)	CT-E (solid-state)
AC rating (UL 508)	Utilization category (Control Circuit Rating Code)	B 300	-
	max. rated operational voltage	300 V AC	-
	Maximum continuous thermal current at B300	5 A	-
	max. making/breaking apparent power at B300	3600 VA / 360 VA	-
Mechanical lifetime		30 x 10^6 switching cycles	-
Electrical lifetime	at AC12, 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 Ta = ≤ 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 78.5 x 78 mm (0.886 x 3.09 x 3.07 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	
Environmental data			
Ambient temperature ranges	operation / storage	-20...+60 °C / -40...+85 °C	
Damp heat	IEC 68-2-30	24 h cycles, 55 °C, 93 % rel., 96 h	
Operational reliability	IEC 68-2-6	6 g	
Mechanical resistance	IEC 68-2-6	10 g	
Isolation data			
Rated impulse withstand voltage U_{imp} between all isolated circuits	VDE 0110, IEC/EN 664	4 kV; 1.2/50 µs	
Pollution category	VDE 0110, IEC 664, IEC 255-5	III/C	
Overvoltage category	VDE 0110, IEC 664, IEC 255-5	III/C	
Rated insulation voltage U_i between supply circuit, control circuit and output circuit	input circuit / output circuit	300 V (supply up to 240 V) 500 V (supply up to 440 V)	
Test voltage between all isolated circuits	type 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	
electronic 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 3 (2 kV L-L)	
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)	
Interference emissions		IEC/EN 61000-6-4	

„Approvals and Marks“ see page 1/4.

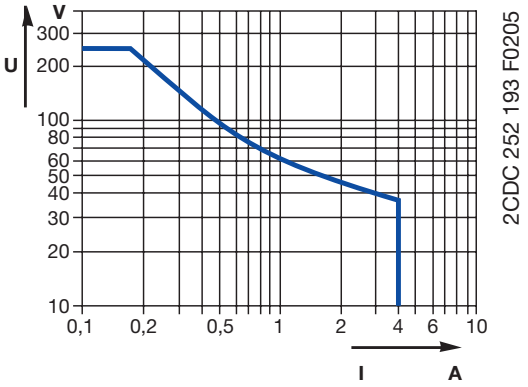
CT-E range
Technical diagrams

Technical diagrams

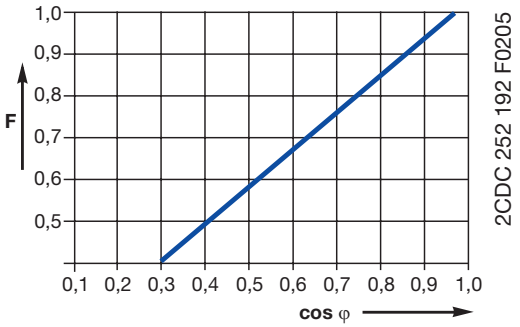
Load limit curves
AC load (resistive)



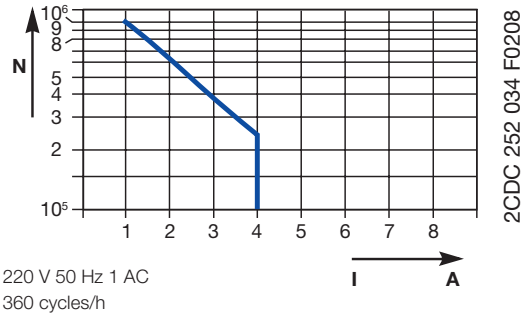
DC load (resistive)



Derating factor F for inductive AC load



Contact lifetime



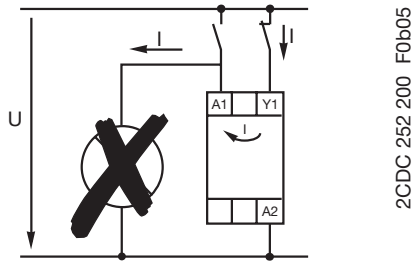
220 V 50 Hz 1 AC
360 cycles/h

CT-E range
Wiring notes, Dimensional drawings

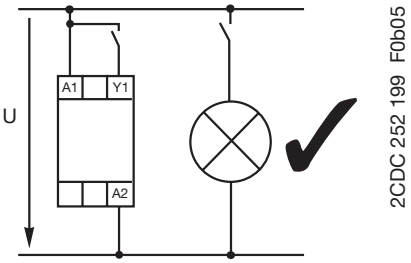
1

Wiring notes

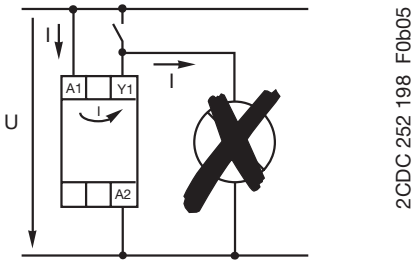
for single-function devices with control contact
(CT-AHE, CT-AWE with auxiliary voltage)



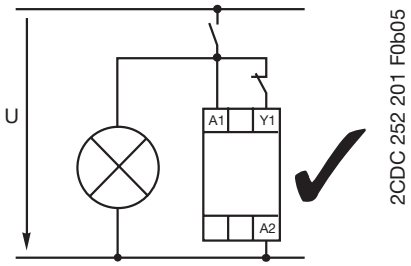
2CDC 252 200 F0b05



2CDC 252 199 F0b05



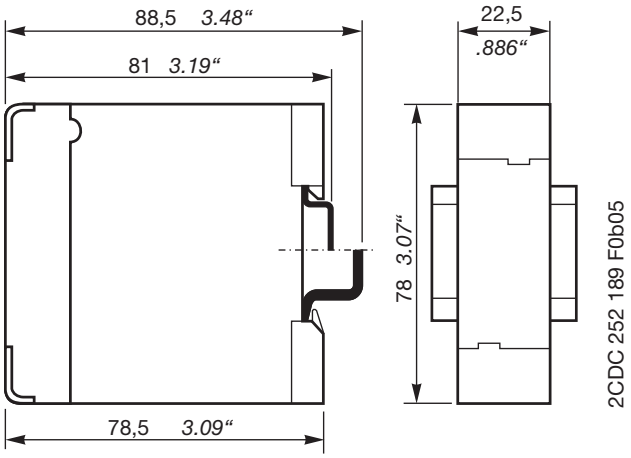
2CDC 252 198 F0b05



2CDC 252 201 F0b05

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
Benefits and advantages

Characteristics

- Diversity:
  - 8 multifunction timers
  - 13 single-function timers
  - 8 switching relays
- 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 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)

1) selected devices

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

Benefits

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.

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.

Snap-On housing

Tool-free DIN rail installation and deinstallation of the Electronic Timer with Snap-On housing.

Time range preselection and fine adjustment ③

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

LEDs for status indication ④

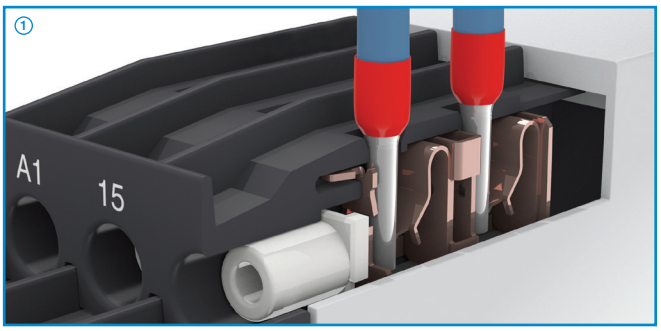
All actual operational states are displayed by front-face LED's, thus simplifying commissioning and troubleshooting.

Integrated marker label ⑤

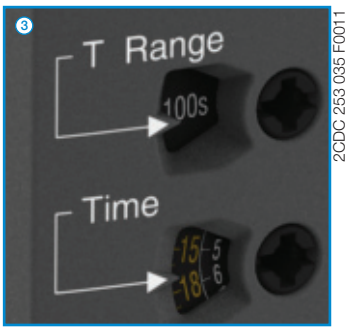
Integrated marker labels allow the product to be marked quickly and simply. No additional marker labels are required.

Sealable transparent cover ⑥

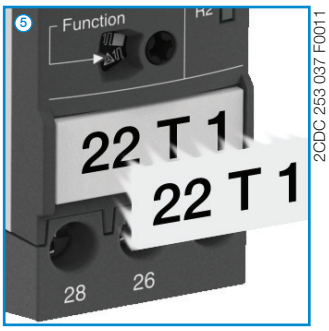
Protection against unauthorized changes of time and threshold values. Available as an accessory.



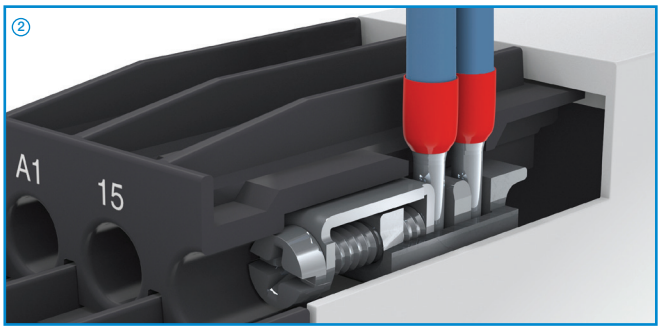
2CDC 253 026 F0011



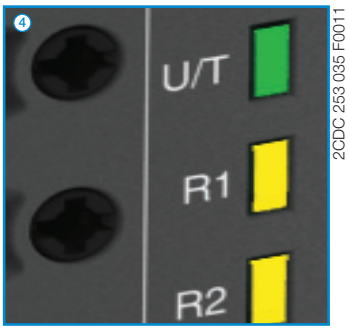
2CDC 253 035 F0011



2CDC 253 037 F0011



2CDC 253 025 F0011



2CDC 253 035 F0011

2CDC 255 006 S0011

CT-S range
Conversion table

Previous Generation			New Generation				
			Double-chamber cage connection terminals			Easy Connect Technology	
1SVR 630 010 R0200	CT-MFS.21		1SVR 730 010 R0200	CT-MFS.21**S**		1SVR 740 010 R0200	CT-MFS.21**P**
1SVR 630 010 R3200	CT-MBS.22		1SVR 730 010 R3200	CT-MBS.22**S**		1SVR 740 010 R3200	CT-MBS.22**P**
1SVR 630 020 R0200	CT-MVS.21		1SVR 730 020 R0200	CT-MVS.21**S**		1SVR 740 020 R0200	CT-MVS.21**P**
1SVR 630 020 R3100	CT-MVS.12		1SVR 730 020 R3100	CT-MVS.12**S**		1SVR 740 020 R3100	CT-MVS.12**P**
1SVR 630 020 R3300	CT-MVS.22		1SVR 730 020 R3300	CT-MVS.22**S**		1SVR 740 020 R3300	CT-MVS.22**P**
1SVR 630 021 R2300	CT-MVS.23		1SVR 730 021 R2300	CT-MVS.23**S**		1SVR 740 021 R2300	CT-MVS.23**P**
1SVR 630 030 R3300	CT-MXS.22		1SVR 730 030 R3300	CT-MXS.22**S**		1SVR 740 030 R3300	CT-MXS.22**P**
1SVR 630 040 R3300	CT-WBS.22		1SVR 730 040 R3300	CT-WBS.22**S**		1SVR 740 040 R3300	CT-WBS.22**P**
1SVR 630 100 R0300	CT-ERS.21		1SVR 730 100 R0300	CT-ERS.21**S**		1SVR 740 100 R0300	CT-ERS.21**P**
1SVR 630 100 R3100	CT-ERS.12		1SVR 730 100 R3100	CT-ERS.12**S**		1SVR 740 100 R3100	CT-ERS.12**P**
1SVR 630 100 R3300	CT-ERS.22		1SVR 730 100 R3300	CT-ERS.22**S**		1SVR 740 100 R3300	CT-ERS.22**P**
1SVR 630 110 R3300	CT-AHS.22		1SVR 730 110 R3300	CT-AHS.22**S**		1SVR 740 110 R3300	CT-AHS.22**P**
1SVR 630 120 R3100	CT-ARS.11		1SVR 730 120 R3100	CT-ARS.11**S**		1SVR 740 120 R3100	CT-ARS.11**P**
1SVR 630 120 R3300	CT-ARS.21		1SVR 730 120 R3300	CT-ARS.21**S**		1SVR 740 120 R3300	CT-ARS.21**P**
1SVR 630 180 R0300	CT-APS.21		1SVR 730 180 R0300	CT-APS.21**S**		1SVR 740 180 R0300	CT-APS.21**P**
1SVR 630 180 R3100	CT-APS.12		1SVR 730 180 R3100	CT-APS.12**S**		1SVR 740 180 R3100	CT-APS.12**P**
1SVR 630 180 R3300	CT-APS.22		1SVR 730 180 R3300	CT-APS.22**S**		1SVR 740 180 R3300	CT-APS.22**P**
1SVR 630 210 R3300	CT-SDS.22		1SVR 730 210 R3300	CT-SDS.22**S**		1SVR 740 210 R3300	CT-SDS.22**P**
1SVR 630 211 R2300	CT-SDS.23		1SVR 730 211 R2300	CT-SDS.23**S**		1SVR 740 211 R2300	CT-SDS.23**P**

ABB's electronic timers in a new housing
Benefits at a glance

Double-chamber cage connection terminals

Easy conversion:
The predecessor range of electronic timers is replaced by an identical range of electronic timers with double-chamber cage connection terminals.
The order code has changed in one digit only:
1SVR**x** … changed to 1SVR**7**....

Ratings:
Double-chamber cage connection terminals provide connection of wires up to 1 x 0,5-4 mm² (1 x 20-12 AWG) or 2 x 0,5-2,5 mm² (2 x 20-14 AWG) rigid or 1 x 0,5-2,5 mm² (1 x 20-14 AWG) / 2 x 0,5-1,5 mm² (2 x 20 -16 AWG), rigid or fine-strand, with or without wire end ferrules. Potential distribution does not require additional terminals.

Extended type designators
The references with push-in terminals or screw terminals can be differentiated easily by the extended type designator:
CT-xxS.xx**S** indicates the screw terminal
CT-xxS.xx**P** indicates the push-in terminal

Easy Connect Technology

New Options:
Additionally to the existing well established screw connections a new innovative connection technology can be offered: Easy Connect Technology with push-in terminals.

Tool-Free Wiring:
The push-in terminals can be wired with rigid or fine-strand wires with wire end ferrules totally tool-free. The connection direction is exactly the same as for the screw version.

Higher utility class:
The Easy Connect Technology provides excellent vibration resistance with gas tight push-in terminals – the right solution for harsh environment.

Ratings:
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.

CT-S range
Ordering details

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

Time function	Rated control supply voltage	Time ranges	Control input	Out-put	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
⊠ ■ ⊠■ 1⎍⊠ 1⎍■ ⎍⊠ ◬1⎍ ⊓⊓ ⊠+ ▭	24-240 V AC/DC 2) 3) 4)	10 (0.05 s-300 h)	■	2 c/o	CT-MVS.21S	1SVR730020R0200		0.148 (0.326)
					CT-MVS.21P	1SVR740020R0200		0.136 (0.300)
	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)
⊠ ■ ⊠■ 1⎍⊠ 1⎍■ ⎍⊠ ⊓⊓ ⊠+ ▭	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)
⊠■ [1] 1⎍⊠ ⊠⎍ ⊠+ ⊠1⎍ ■1⎍ ▭	24-48 V DC, 24-240 V AC 5)	2 x 10 (0.05 s- 300 h)	■	2 c/o	CT-MXS.22S	1SVR730030R3300		0.142 (0.313)
					CT-MXS.22P	1SVR740030R3300		0.131 (0.289)
⊠ ■ ⊠■ 1⎍⊠ 1⎍■ ⎍⊠ ⎍■ ◬1⎍ ⊓⊓ ▭	24-240 V AC/DC 2) 3) 4)	10 (0.05 s-300 h)		2 c/o	CT-MFS.21S	1SVR730010R0200		0.145 (0.320)
					CT-MFS.21P	1SVR740010R0200		0.133 (0.293)
	24-48 V DC, 24-240 V AC 3) 4)	10 (0.05 s-300 h)	□/□	2 c/o	CT-MBS.22S	1SVR730010R3200		0.140 (0.309)
					CT-MBS.22P	1SVR740010R3200		0.129 (0.284)

⊠(+) ON-delay (accumulative)
■ OFF-delay without aux. voltage
1⎍⊠ Impulse-ON
1⎍■ Impulse-OFF
⊠■ Symmetrical ON-delay and OFF-delay
⎍⊠ Flasher starting with ON
⎍■ Flasher staring with OFF
⎍⊠ Pulse generator starting
◬1⎍ Star-delta change-over with impulse
⊓⊓ Pulse former
▭ ON/OFF-function
◬⊠ Star-delta change-over twice ON-delayed with ON or OFF
⊠⎍ Pulse generator starting with ON or OFF
⊠1⎍ Single-pulse generator
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

[1] Asymmetrical ON- and OFF-delay
[2] Extended temperature range -40 °C
[3] Remote potentiometer connection
[4] 2nd c/o contact selectable as instantaneous contact
[5] 2 remote potentiometer connections

■ Control input with voltage-related triggering
□ Control input with volt-free triggering

CT-S range
Ordering details

CT-ERS.21P

CT-AHS.22P

CT-SDS.23P

⊠(+)	ON-delay (accumulative)
■	OFF-delay without aux. voltage
1⎍⊠	Impulse-ON
⎍⊠	Flasher starting with ON
⎍■	Flasher staring with OFF
▭	ON/OFF-function
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

Time function	Rated control supply voltage	Time ranges	Control input	Out-put	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
⊠ 1⎍⊠ ⎍⊠ ⎍■ ▭ ⊠1⎍ ■1⎍	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)
⊠	24-240 V AC/DC [2]	10 (0.05 s- 300 h)		2 c/o	CT-ERS.21S	1SVR730100R0300		0.130 (0.287)
					CT-ERS.21P	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)
■	24-240 V AC/DC [2]	10 (0.05 s- 300 h)	■	2 c/o	CT-APS.21S	1SVR730180R0300		0.146 (0.322)
					CT-APS.21P	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 (0.280)
				1 c/o	CT-APS.12S	1SVR730180R3100		0.109 (0.240)
					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 (0.300)
					CT-AHS.22P	1SVR740110R3300		0.125 (0.276)
■ [6]	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		0.100 (0.220)
				2 c/o	CT-ARS.21S	1SVR730120R3300		0.124 (0.273)
					CT-ARS.21P	1SVR740120R3300		0.115 (0.254)
■ [6]	110-127 V AC or 110 V DC [8]				CT-VBS.17	1SVR430261R6000		0.123 (0.271)
	200-240 V AC/DC [8]				CT-VBS.18	1SVR430261R5000		0.118 (0.260)
⧋ [7]	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 (0.260)
						1SVR740211R2300		0.112 (0.247)

[1] Asymmetrical ON- and OFF-delay
[2] Extended temperature range -40 °C
[3] Remote potentiometer connection
[4] 2nd c/o contact selectable as instantaneously contact
[5] 2 remote potentiometer connections
[6] Without auxiliary voltage
[7] 50 ms transition time
[8] For DC contactor coils

■ Control input with voltage-related triggering
□ Control input with volt-free triggering

CT-S range
Ordering details

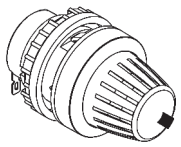
CT-IRS.35

▭ ON/OFF-function

Time function	Rated control supply voltage	Time ranges	Control input	Out-put	Type	Order code	Price 1 pce	Weight (1 pce) kg (lb)
▭	24 V AC/DC			2 c/o	CT-IRS.16	1SVR430220R9100		0.121 (0.267)
	110-240 V AC				CT-IRS.14	1SVR430221R7100		0.126 (0.278)
	24 V AC/DC				CT-IRS.26	1SVR430220R9300		0.135 (0.298)
	110-240 V AC				CT-IRS.24	1SVR430221R7300		0.141 (0.311)
	24 V AC/DC			2 c/o	CT-IRS.26G[9)]	1SVR430230R9300		0.147 (0.324)
	110-240 V AC				CT-IRS.24G[9)]	1SVR430231R7300		0.150 (0.331)
	24 V AC/DC			3 c/o	CT-IRS.36	1SVR430220R9400		0.159 (0.351)
	220-240 V AC				CT-IRS.35	1SVR430221R1400		0.161 (0.355)

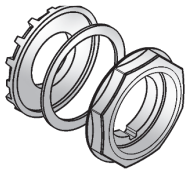
[9)] Contacts with gold-plated contacts

CT-S range
Ordering details - Accessories



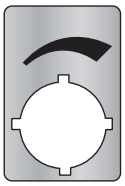
2CDC 252 041 F0009

MT-x50B



2CDC 252 042 F0009

30 mm adapters



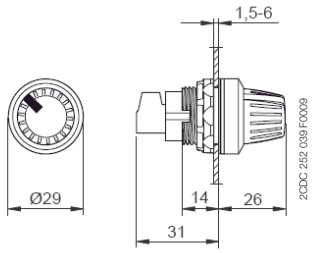
2CDC 252 043 F0209

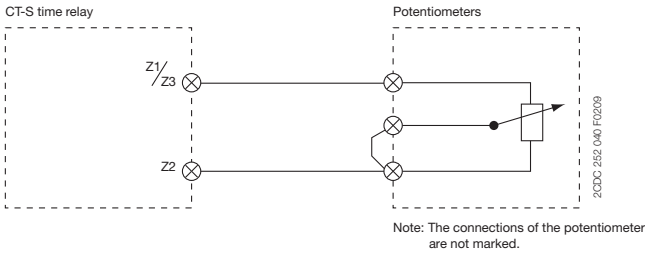
Marker label 29.6 x 44.5 mm

Remote potentiometer

50 kΩ ±20 % - 0,2 Ω, degree of protection IP66

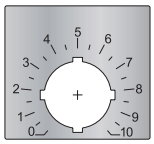
Material	Diameter in mm	Type	Order code	Price 1 piece	Pack.-unit pieces	Weight 1 piece g / oz
Plastic, black	22.5	MT-150B	1SFA611410R1506		1	0.040
Plastic, chrome	22.5	MT-250B	1SFA611410R2506		1	0.040
Metal, chrome	22.5	MT-350B	1SFA611410R3506		1	0.048





Note: The connections of the potentiometer are not marked.

Note: Technical specifications see data sheet

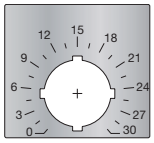


2CDC 252 044 F0209

Marker label with scale 0-10
48.5 x 44.5 mm

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	



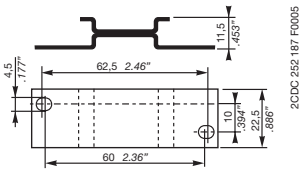
2CDC 252 045 F0209

Marker label with scale 0-30
48.5 x 44.5 mm

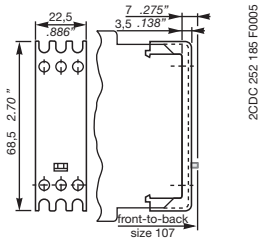
Marker label

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

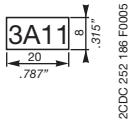
CT-S range
Ordering details - Accessories



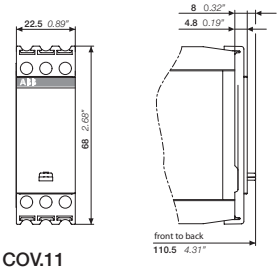
ADP.01



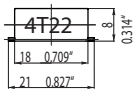
COV.01



MAR.01



COV.11



MAR.02

Accessories

Material	for devices	Type	Order code	Price 1 piece	Pack.-unit pieces	Weight 1 piece g / oz
Adapter for screw mounting[1)]	CT-S 22.5 mm	ADP.01	1SVR430029R0100		1	18.4/0.65
Sealable transparent cover		COV.01	1SVR430005R0100		1	5.2/0.18
Sealable transparent cover[1)]	CT-S.S/P 22.5 mm	COV.11	1SVR730005R0100		1	4 / 0.129

Marker label

Material	for devices	Type	Order code	Price	Pack.-unit pieces	Weight 1 piece g / oz
Marker [1)]	CT-S without DIP switches	MAR.01	1SVR366017R0100		10	0.19/0.007
Marker	CT-S with DIP switches	MAR.02	1SVR430043R0000		10	0.13/0.005
Marker	CT-S.S/P with DIP switches	MAR.12	1SVR730006R0000		10	0.152/0.335

[1)] also available for CT-S.S/P

CT-S 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
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**.

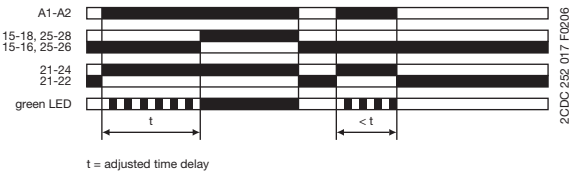
Function of the yellow LEDs:

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

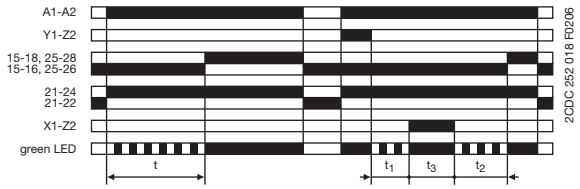
This function requires continuous control supply voltage for timing.
Timing begins when control supply voltage is applied. The green LED flashes during timing. When the selected time delay is complete, the output relay energizes and the flashing green LED turns steady.
If control supply voltage is interrupted,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

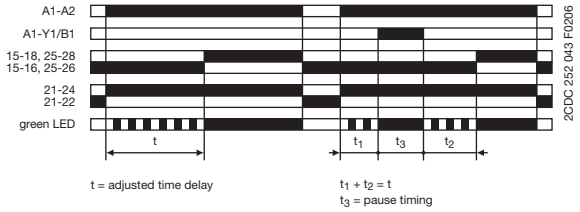
This function requires continuous control supply voltage for timing.

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 t_1 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.

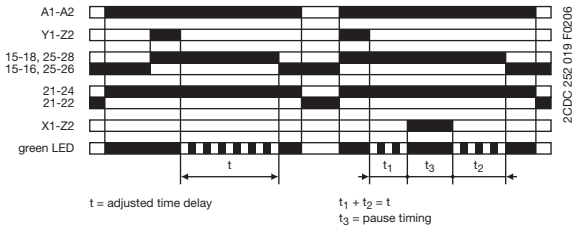
If control input **Y1-Z2** closes before the time delay is complete, the time delay is reset and the output relay does not change state. Timing starts again when control input **Y1-Z2** re-opens.

Pause timing / Accumulative OFF-delay (CT-MFS):

Timing can be paused by closing control input **X1-Z2**. The elapsed time 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.



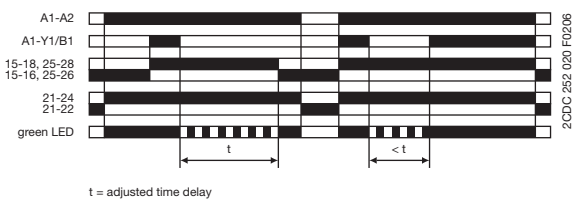
OFF-delay with auxiliary voltage (Delay on break) CT-MVS, CT-APS

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.

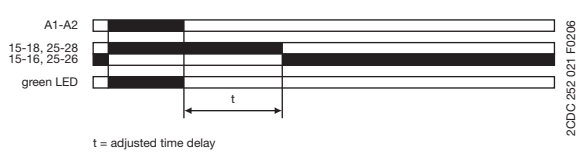


OFF-delay without auxiliary voltage (True delay on break) CT-ARS

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.

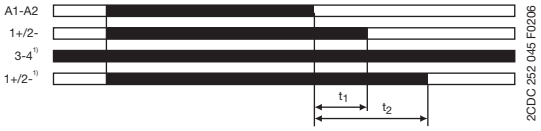


CT-S range
Function diagrams

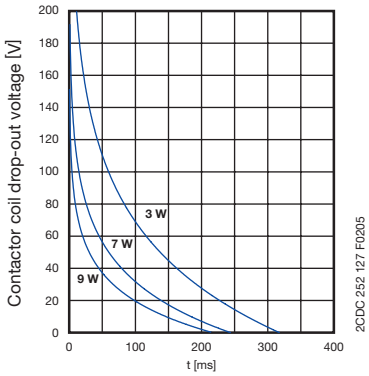
OFF-delay without auxiliary voltage for DC contactor coils CT-VBS

The DC contactor coil connected to the output is energized when control supply voltage is applied.

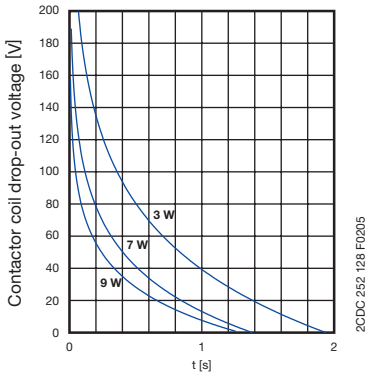
If control supply voltage is disconnected, the DC contactor coil remains energized for a short time delay. This time delay depends on the coil drop-out voltage and on the wattage of the contactor coil.



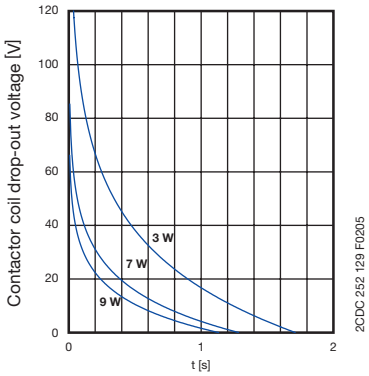
t_1 = OFF-delay (without jumper between terminals 3 and 4 1))
t_2 = OFF-delay (with jumper between terminals 3 and 4 1))
1) only for version 200-240 V AC



Time delay guideline values
200-240 V AC version without jumper 3/4



Time delay guideline values
200-240 V AC version with jumper 3/4



Time delay guideline values
110-127 V AC version

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

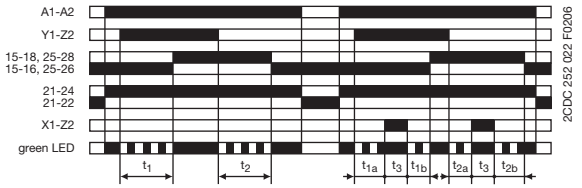
This function requires continuous control supply voltage for timing.

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

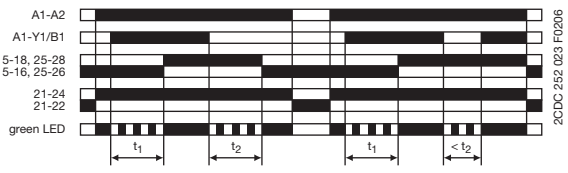
Symmetrical ON-delay and OFF-delay (Symmetrical delay on make and delay on break) CT-MVS

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

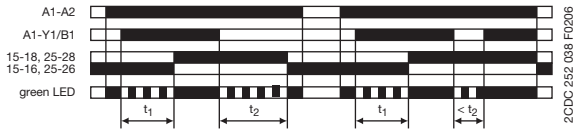
This function requires continuous control supply voltage for timing.

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.



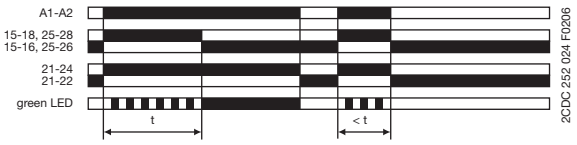
t_1 = adjusted ON-delay
t_2 = adjusted OFF-delay
t_1 and t_2 independently adjustable

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.

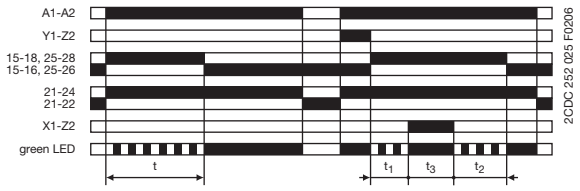
The output relay energizes immediately when control supply voltage is applied and de-energizes after the set pulse time is complete. If control input **Y1-Z2** is open, timing begins when control supply voltage is applied. Or, if control supply voltage is already applied, opening control input **Y1-Z2** 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.

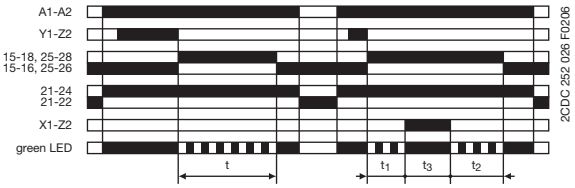
If control supply voltage is applied, opening control input **Y1-Z2** energizes the output relay immediately and starts timing. The green LED flashes during timing. When the selected pulse time is complete, the output relay de-energizes and the flashing green LED turns steady.

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

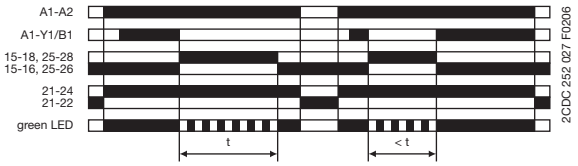
Impulse-OFF with auxiliary voltage (Trailing edge interval) CT-MVS

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

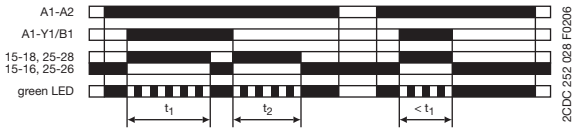
This function requires continuous control supply voltage for timing.

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 t_2. 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.

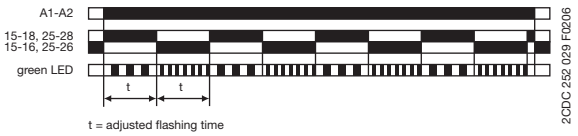


t_1 = adjusted pulse time 1
t_2 = adjusted pulse time 2

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.

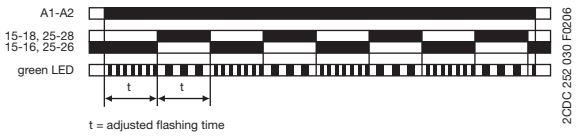


t = adjusted flashing time

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.



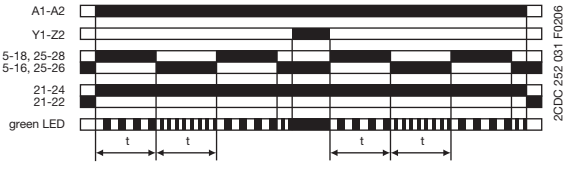
t = adjusted flashing time

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.



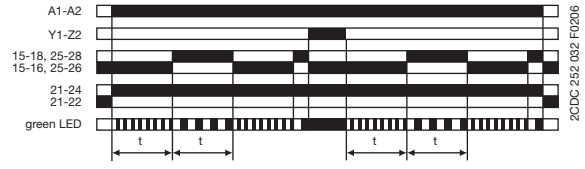
t = adjusted flashing time

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

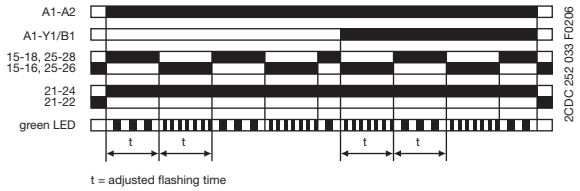
CT-S range
Function diagrams

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.



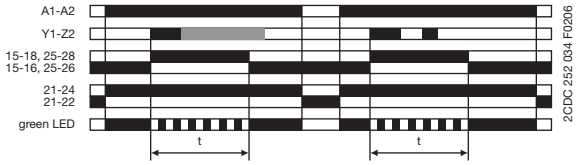
t = adjusted flashing time

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.



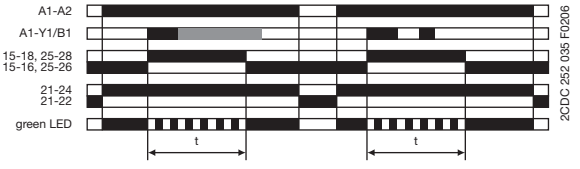
t = adjusted pulse time

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

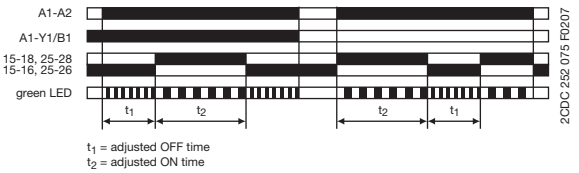
Pulse generator, starting with the ON or OFF time (Recycling unequal times, ON or OFF first) CT-MXS

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

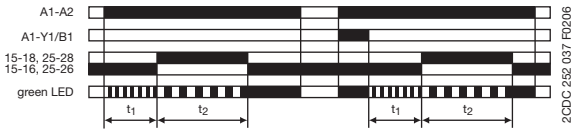
This function requires continuous control supply voltage for timing.

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.



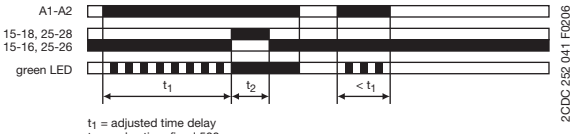
t_1 = adjusted OFF time
t_2 = adjusted ON time
t_1 and t_2 independently adjustable

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.



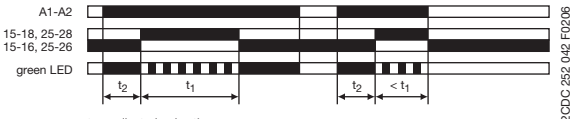
t_1 = adjusted time delay
t_2 = pulse time fixed 500 ms

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

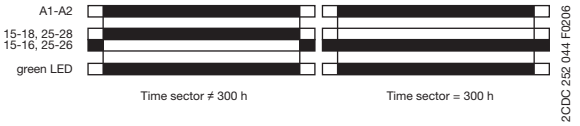
ON/OFF-Function CT-MFS, CT-MBS, CT-MVS, CT-MXS, CT-WBS

This function is used for test purposes during commissioning and troubleshooting.

If the selected max. value of the time range is smaller than 300 h (front-face potentiometer “Time sector” ≠ 300 h), applying control supply voltage energizes the output relay immediately and the green LED glows. Interrupting control supply voltage, de-energizes the output relay.

If the selected max. value of the time range is 300 h (front-face potentiometer “Time sector” = 300 h) and control supply voltage is applied, the green LED glows, but the output relay does not energize.

Time settings and operating of the control inputs have no effect on the operation.



Switching relays CT-IRS

The switching relay may be used to increase the number of available contacts or to reinforce contacts, or as a coupling/decoupling interface.

Approx. 10 ms after applying control supply voltage to terminals **A1-A2**, the output relay energizes.

If control supply voltage is interrupted, the output relay de-energizes.

n = 1, 2 or 3

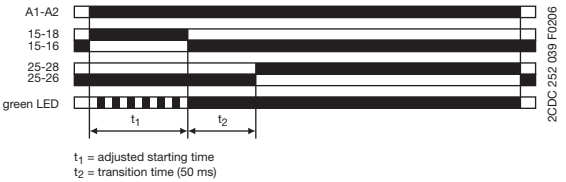
CT-S range
Function diagrams

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

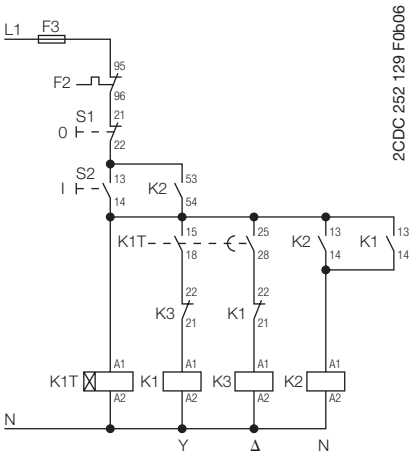
This function requires continuous control supply voltage for timing.

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)



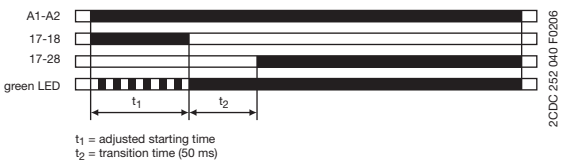
Control circuit diagram

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

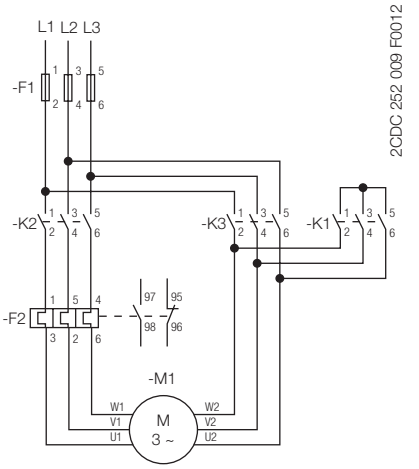
This function requires continuous control supply voltage for timing.

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.

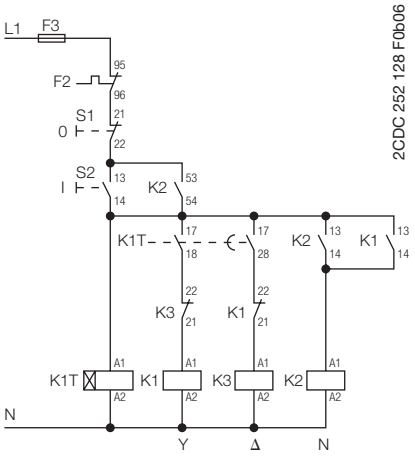
Now, the fixed transition time t_2 of 50 ms starts. When the transition time is complete, the second output contact energizes the delta contactor connected to terminals **17-28**. The delta contactor remains energized as long as control supply voltage is applied to the unit.



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



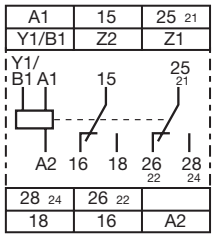
Power circuit diagram



Control circuit diagram

CT-S range
Connection diagrams

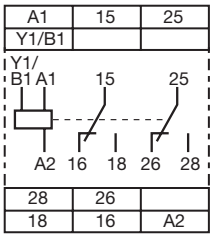
CT-MVS.21



2CDC 252 002 F0b06

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

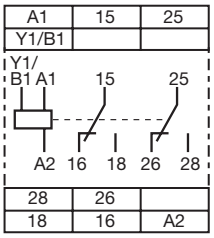
CT-MVS.22



2CDC 252 003 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
A1-Y1/B1 Control input

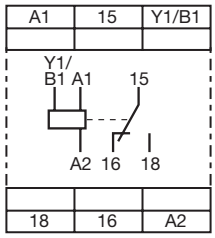
CT-MVS.23



2CDC 252 003 F0b06

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

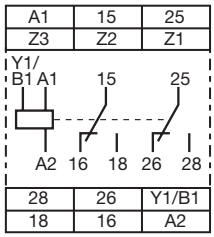
CT-MVS.12



2CDC 252 004 F0b06

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

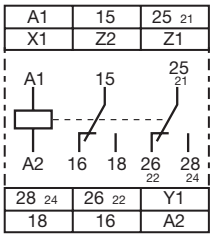
CT-MXS.22



2CDC 252 005 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
A1-Y1/B1 Control input
Z1-Z2 Remote potentiometer connection
Z3-Z2 Remote potentiometer connection

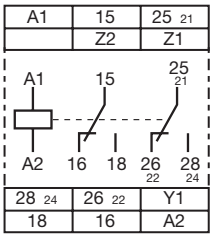
CT-MFS.21



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

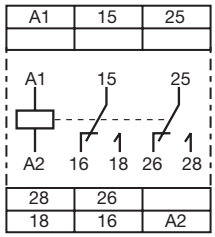
CT-MBS.22



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

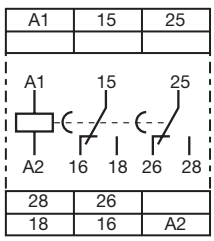
CT-WBS.22



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

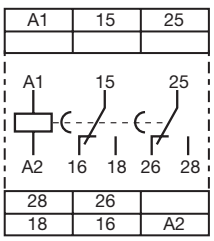
⊠ CT-ERS.21



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

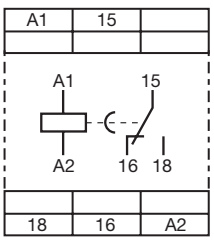
⊠ CT-ERS.22



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

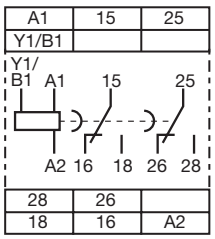


2CDC 252 010 F0b06

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

CT-S range
Connection diagrams

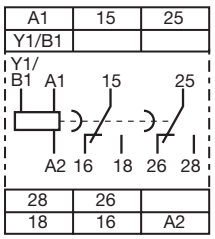
CT-APS.21



2CDC 252 011 F0b06

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

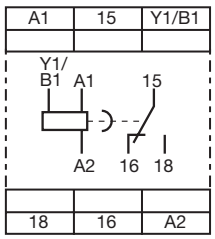
CT-APS.22



2CDC 252 011 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
A1-Y1/B1 Control input

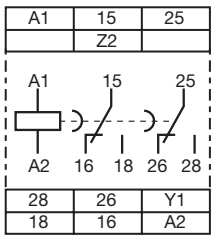
CT-APS.12



2CDC 252 012 F0b06

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

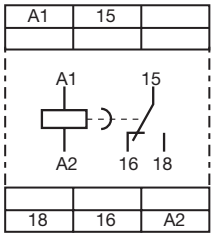
CT-AHS.22



2CDC 252 013 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
Y1-Z2 Control input

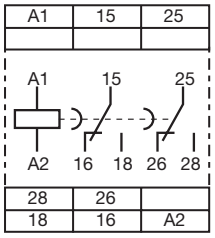
CT-ARS.11



2CDC 252 014 F0b06

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

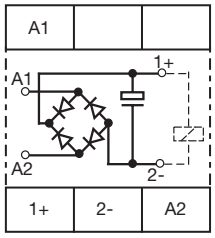
CT-ARS.21



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

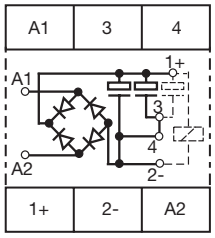
CT-VBS.17



2CDC 252 107 F0b05

A1-A2 Supply: 110-127 V AC
1+ - 2- Contactor coil

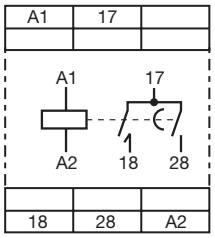
CT-VBS.18



2CDC 252 108 F0b05

A1-A2 Supply: 200-240 V AC
1+ - 2- Contactor coil
3-4 Jumper for setting the time delay (see time delay diagram)

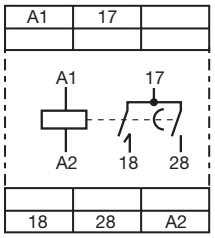
⚠ CT-SDS.22



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

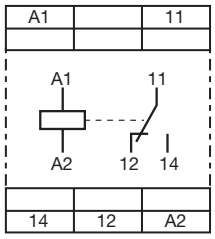


2CDC 252 016 F0b06

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

CT-S range
Connection diagrams

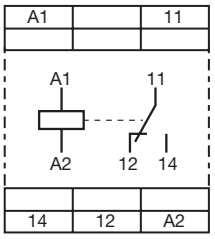
CT-IRS.16



A1-A2 Supply: 24 AC/DC

11-12/14 1. c/o contact

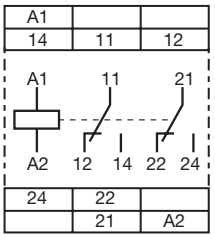
CT-IRS.14



A1-A2 Supply: 110-240 V AC

11-12/14 1. c/o contact

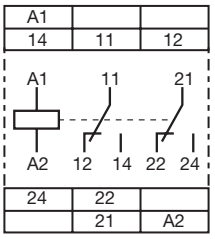
CT-IRS.26



A1-A2 Supply: 24 AC/DC

11-12/14 1. c/o contact
21-22/24 2. c/o contact

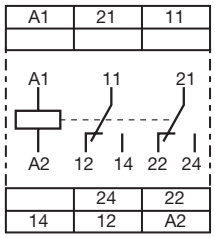
CT-IRS.24



A1-A2 Supply: 110-240 V AC

11-12/14 1. c/o contact
21-22/24 2. c/o contact

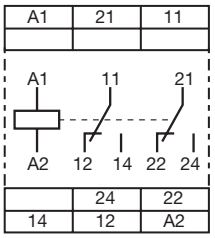
CT-IRS.26G (gold-plated cont.)



A1-A2 Supply: 24 AC/DC

11-12/14 1. c/o contact
21-22/24 2. c/o contact

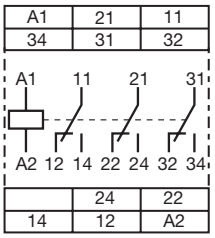
CT-IRS.24G (gold-plated cont.)



A1-A2 Supply: 110-240 V AC

11-12/14 1. c/o contact
21-22/24 2. c/o contact

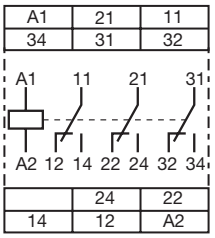
CT-IRS.36



A1-A2 Supply: 24 V AC/DC

11-12/14 1. c/o contact
21-22/24 2. c/o contact
31-32/34 3. c/o contact

CT-IRS.35



A1-A2 Supply: 220-240 V AC

11-12/14 1. c/o contact
21-22/24 2. c/o contact
31-32/34 3. c/o contact

CT-S range
Technical data

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	start timing external (CT-MVS, CT-MXS, CT-APS)
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 (CT-MFS, CT-MBS, CT-AHS)
	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)		Δt < 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 (R, R1, R2)
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 (CT-IRS.2xG: 10 mV / 10 µA)
Maximum switching voltage / maximum switching current		see load limit curves (CT-IRS.2xG: 10 V / 200 mA)
Rated operational current I_e (IEC/EN 60947-5-1)	AC12 (resistive) at 230 V	4 A
	AC15 (inductive) at 230 V	3 A
	AC15 (inductive) at 230 V	4 A
	DC13 (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 AC12, 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 and 1SVR 630 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		
Rated insulation voltage U_i	input circuit / output circuit	500 V
Rated impulse withstand voltage U_{imp} between all isolated circuits	VDE 0110, IEC/EN 60664	4 kV; 1.2/50 µs
Power-frequency withstand voltage test between all isolated circuits (test voltage)	routine test	2.0 kV, 50 Hz, 1 s
	type test	2.5 kV, 50 Hz, 1 min
Basic insulation (IEC/EN 61140)	input circuit / output c ircuit	500 V
Protective separation (IEC/EN 61140; IEC/EN 50178; VDE 0106 part 101 and part 101/ A1)	input circuit / output circuit	250 V
Pollution degree (IEC/EN 60664-1, VDE 0110)		3
Overvoltage category (IEC/EN 60664-1, VDE 110)		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		2002/95/EC
Electromagnetic compatibility		
Interference immunity to		IEC/EN 61000-6-1, IEC/EN 61000-6-2
electronic 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	Level 3
Interference emissions		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

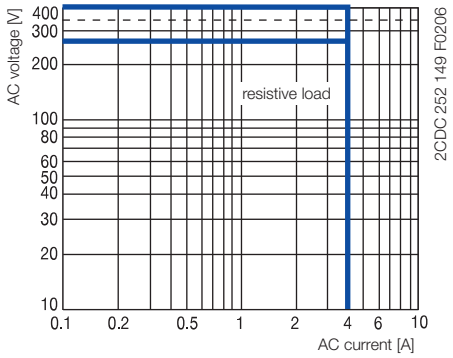
„Approvals and Marks“ see page 1/4.

CT-S range
Technical diagrams

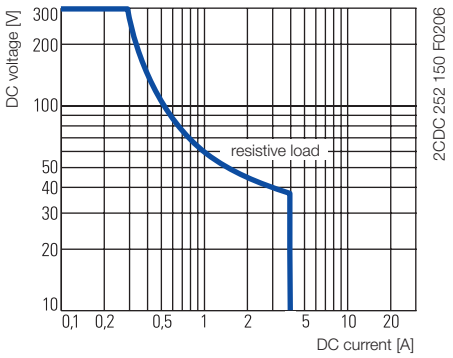
Technical diagrams

Load limit curves

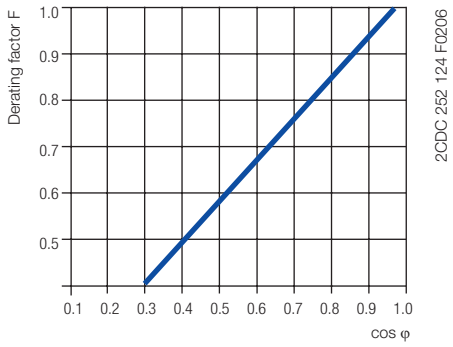
AC load (resistive)



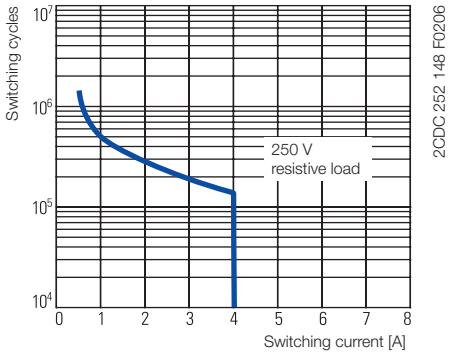
DC load (resistive)



Derating factor F
for inductive AC load



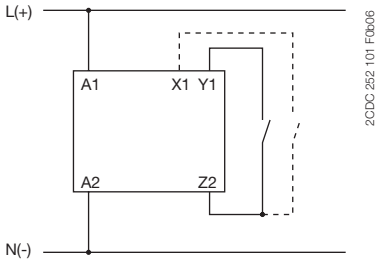
Contact lifetime



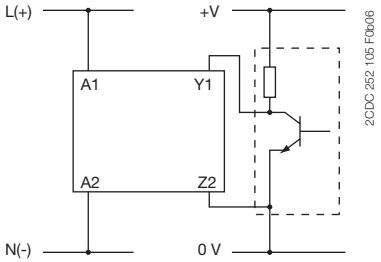
CT-S range
Wiring notes, Dimensional drawings

Wiring notes

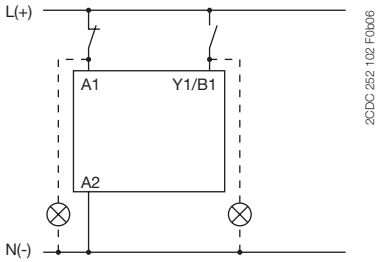
Control inputs (volt-free triggering)

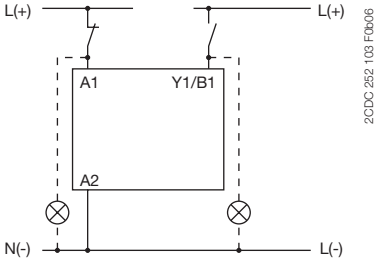


Triggering of the control inputs (volt-free) with a proximity switch (3 wire)



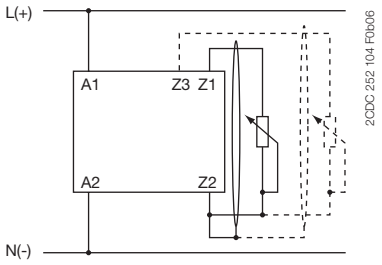
Control inputs (voltage-related triggering)





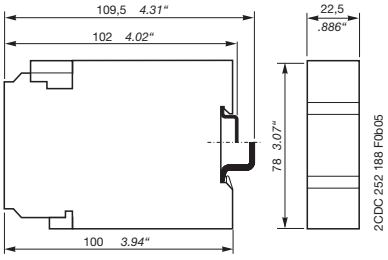
The control input **Y1/B1** is triggered with electric potential against **A2**. It is possible to use the control supply voltage from terminal **A1** or any other voltage within the rated control supply voltage range.

Remote potentiometer

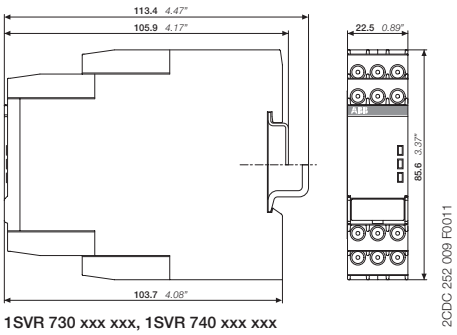


Dimensional drawing

Dimensions in mm and inches



1SVR 430 xxx xxx, 1SVR 630 xxx xxx



1SVR 730 xxx xxx, 1SVR 740 xxx xxx

CT-S range
Notes