Electronic timers

CT range

Content

Electronic timers
CT range
Overview

Special features and differences of CT-D, CT-E and CT-S range

Electronic timers CT-D range the modular timers

Ideally suited for installation in distribution panels

- Diversity:
  - 2 multifunction timers
  - 10 single-function timers
- Devices with:
  - 1 or 2 c/o contacts
  - Control input: voltage-related triggering, polarized, capable of switching a parallel load
- Width of only 17.5 mm, this corresponds to one rail division in the distribution panel.
- Light-grey enclosure in RAL 7035, same colour as MDRC range

Electronic timers CT-E range the economic range

Perfect price-performance ratio for OEM users

- Diversity:
  - 2 multifunction timers
  - 56 single-function timers
  - 4 switching relays
- Devices with:
  - solid-state output for contactless switching (CT-MKE, CT-AKE und CT-EKE)
- Wide connecting screws in M3 (Pozidrive 1) for easy and fast connection

Electronic timers CT-S range the high end timers

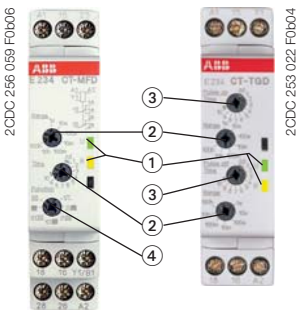
Universal and economic

- Diversity:
  - 8 multifunction timers
  - 13 single-function timers
  - 8 switching relays
- Devices with:
  - 1 or 2 c/o contacts
  - 2nd c/o contact can be selected as instantaneous contact
  - Control input: volt-free or voltage-related triggering
  - Remote potentiometer connection: When an external potentiometer is connected, the internal potentiometer is disabled.
- Sealable transparent cover for protection against unautorized changes of time and threshold values
- Integrated marker label

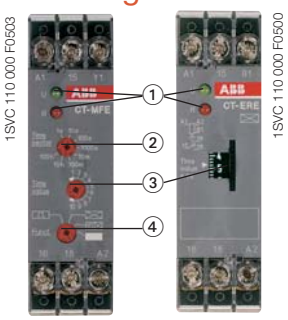
Electronic timers
CT range
Overview

① LEDs for status indication
② Time range adjustment
③ Fine adjustment of the desired time delay
④ Preselection of the desired timing function
⑤ Set the 2nd c/o contact as an instantaneous contact

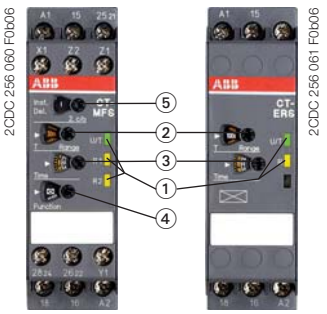
CT-D range



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-MXS, CT-MFS, CT-MBS	
⧋	Star-delta change-over		CT-SDD, CT-SAD				CT-SDS
⧋1⎍	Star-delta change-over with impulse					CT-MVS.2x, CT-MFS, CT-MBS	
⧋⊠	Star-delta change-over twice ON-delayed				CT-YDE, CT-SDE		
⊠+ ⊠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 cintacts 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
CT range
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	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■

Electronic timers

CT-D range

Contents

Electronic timers
CT-D range
Benefits and advantages

CT-D range - the modular timers

Ideally suited for installation in distribution panels

- Diversity:
  - 2 multifunction timers
  - 10 single-function timers
- Control supply voltages:
  - Wide range: 12-240 V AC/DC
  - Multi range: 24-48 V DC, 24-240 V AC
- 7 time ranges, from 0.05 s to 100 h or
  4 time ranges, from 0.05 s - 10 min
- Width of only 17.5 mm
- Light-grey enclosure 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 a parallel load
- Approvals / Marks
  (partly pending)

Direct reading scales

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

2CDC 253 066 F0006

2CDC 253 132 F0006

LEDs for status indication

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

Connecting terminals

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.


2CDC 253 033 F0004

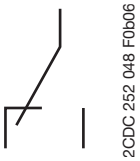
2CDC 253 021 F0004

Width 17,5 mm

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

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.


2CDC 252 048 F0b06

Operating controls

① LEDs for status indication

U - green LED:

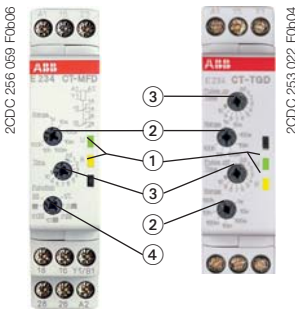

control supply voltage applied


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



multifunctional **single-functional**

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

Electronic timers
CT-D range
Ordering details

CT-MFD.12

CT-MFD.21

CT-ERD.12

CT-ERD.22

CT-AHD.22

Type	Rated control supply voltage	Control input	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg / lb
Multifunction timers						
CT-MFD: 7 functions [1], 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs						
CT-MFD.12	24-48 V DC, 24-240 V AC	■	**1SVR 500 020 R0000**	1		0.060 / 0.132
CT-MFD: 7 functions [1], 7 time ranges (0.05 s - 100 h), 2 c/o contacts, 2 LEDs						
CT-MFD.21	12-240 V AC/DC	■	**1SVR 500 020 R1100**	1		0.065 / 0.143
ON-delay timers ⊠						
CT-ERD: 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs						
CT-ERD.12	24-48 V DC, 24-240 V AC		**1SVR 500 100 R0000**	1		0.060 / 0.132
CT-ERD: 7 time ranges (0.05 s - 100 h), 2 c/o contacts, 2 LEDs						
CT-ERD.22	24-48 V DC, 24-240 V AC		**1SVR 500 100 R0100**	1		0.065 / 0.143
OFF-delay timers ▬						
CT-AHD: 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs						
CT-AHD.12	24-48 V DC, 24-240 V AC	■	**1SVR 500 110 R0000**	1		0.060 / 0.132
CT-AHD: 7 time ranges (0.05 s - 100 h), 2 c/o contacts, 2 LEDs						
CT-AHD.22	24-48 V DC, 24-240 V AC	■	**1SVR 500 110 R0100**	1		0.065 / 0.143

[1] Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Flasher starting with ON, Flasher starting with OFF, Pulse former

- Function diagrams..... 1/9
- Technical diagrams..... 1/15
- Connection diagrams.....1/12
- Wiring notes, Dimensional drawings1/16
- Technical data..... 1/13
- Wiring notes, Dimensional drawings1/16

Electronic timers
CT-D range
Ordering details

CT-VWD.12

CT-EBD.12

CT-TGD.12

CT-TGD.22

CT-SDD.22

Type	Rated control supply voltage	Control input	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg / lb
Impulse-ON timers 1⎍⊠						
CT-VWD: 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs						
CT-VWD.12	24-48 V DC, 24-240 V AC		**1SVR 500 130 R0000**	1		0.060 / 0.132
Flasher, starting with ON ⎍⊠						
CT-EBD: 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs						
CT-EBD.12	24-48 V DC, 24-240 V AC		**1SVR 500 150 R0000**	1		0.060 / 0.132
Pulse generators ⊠⎍						
CT-TGD: 2 x 7 time ranges (0.05 s - 100 h) [2], 1 c/o contact, 2 LEDs						
CT-TGD.12	24-48 V DC, 24-240 V AC	■	**1SVR 500 160 R0000**	1		0.060 / 0.132
CT-TGD: 2 x 7 time ranges (0.05 s - 100 h) [2], 2 c/o contacts, 2 LEDs						
CT-TGD.22	24-48 V DC, 24-240 V AC	■	**1SVR 500 160 R0100**	1		0.065 / 0.143
Star-delta timers ⍋						
CT-SDD: 4 time ranges (0.05 s - 10 min), transition time 50 ms fixed, 2 n/o contacts, 3 LEDs						
CT-SDD.22	24-48 V DC, 24-240 V AC		**1SVR 500 211 R0100**	1		0.065 / 0.143
CT-SAD: 4 time ranges (0.05 s - 10 min), transition time adjustable, 2 n/o contacts, 3 LEDs						
CT-SAD.22	24-48 V DC, 24-240 V AC		**1SVR 500 210 R0100**	1		0.065 / 0.143

[2] ON and OFF times adjustable independently: 2 x 7 time ranges 0.05 s - 100 h

- Function diagrams..... 1/9
- Technical diagrams..... 1/15
- Connection diagrams.....1/12
- Wiring notes, Dimensional drawings1/16
- Technical data..... 1/13
- Wiring notes, Dimensional drawings1/16

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.

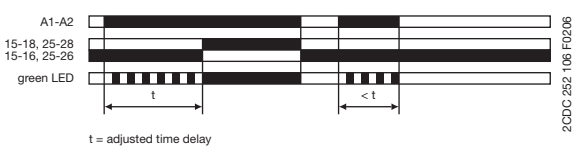
⊠ ON-delay (Delay on make) CT-ERD, CT-MFD

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

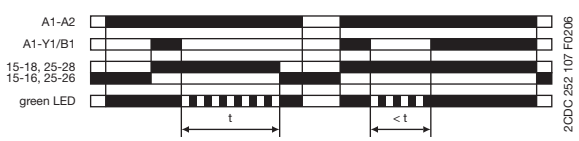
▬ OFF-delay with auxiliary voltage (Delay on break) CT-AHD, CT-MFD

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

Electronic timers
CT-D range
Function diagrams

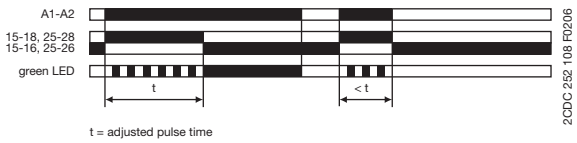
Impulse-ON (Interval) CT-VWD, CT-MFD

This function requires continuous control supply voltage for timing.

The output relay energizes immediately when control supply voltage is applied and de-energizes after the set pulse time is complete. The green LED flashes during timing. When the selected pulse time is complete, the flashing green LED turns steady.

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

Control input **A1-Y1/B1** of the CT-MFD is disabled when this function is selected.



t = adjusted pulse time

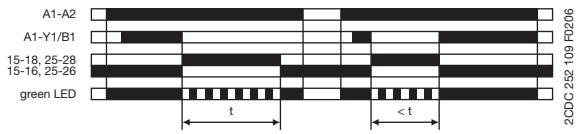
Impulse-OFF with auxiliary voltage (Trailing edge interval) CT-MFD

This function requires continuous control supply voltage for timing.

If control supply voltage is applied, opening control input **A1-Y1/B1** energizes the output relay immediately and starts timing. The green LED flashes during timing. When the selected pulse time is complete, the output relay de-energizes and the flashing green LED turns steady.

Closing control input **A1-Y1/B1**, before the time delay is complete, de-energizes the output relay and resets the time delay.

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



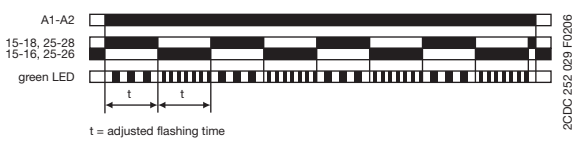
t = adjusted pulse time

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.



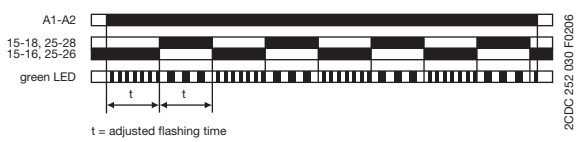
t = adjusted flashing time

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

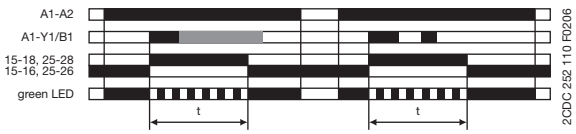
Electronic timers
CT-D range
Function diagrams

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

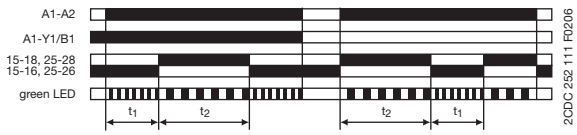
Pulse generator, starting with the ON or OFF time (Recycling unequal times, ON or OFF first)
CT-TGD

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.

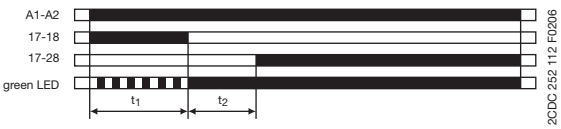


t_1 = adjusted OFF time
t_2 = adjusted ON time

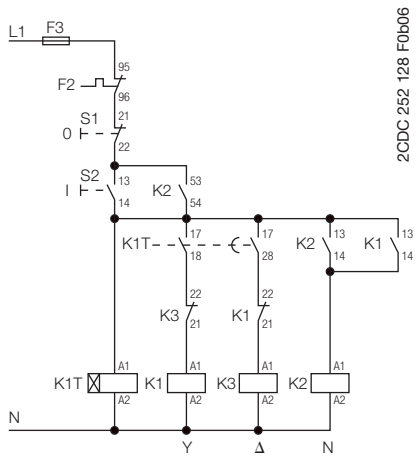
Star-delta change-over (Star-delta starting)
CT-SDD, CT-SAD

This function requires continuous control supply voltage for timing.

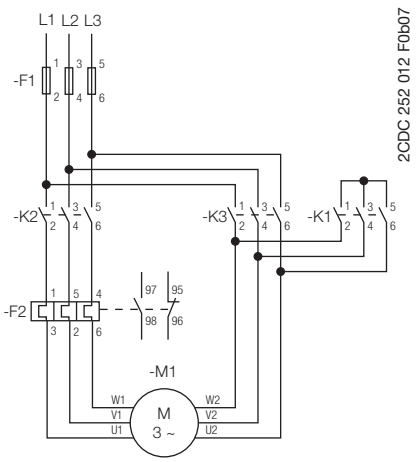
Applying control supply voltage to terminals **A1-A2**, energizes the star contactor connected to terminals **17-18** and begins the set starting time t_1. The green LED flashes during timing. When the starting time is complete, the first output contact de-energizes the star contactor. Now, the transition 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



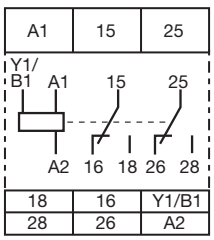
Control circuit diagram



Power circuit diagram

Electronic timers
CT-D range
Connection diagrams

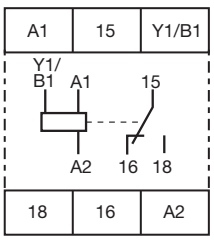
CT-MFD.21



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

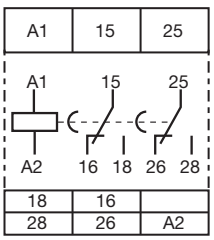
CT-MFD.12



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

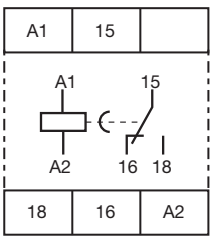
CT-ERD.22



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

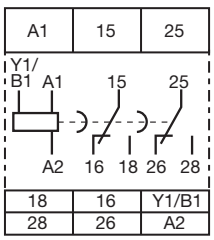
CT-ERD.12



2CDC 252 177 F0b05

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

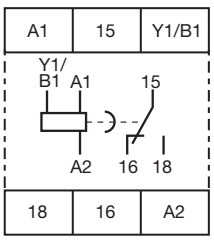
CT-AHD.22



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

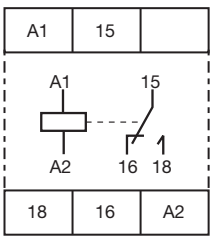
CT-AHD.12



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

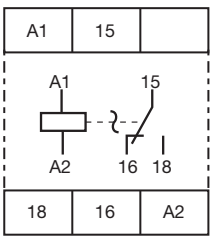
CT-VWD.12



2CDC 252 179 F0b05

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

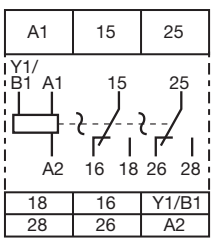
CT-EBD.12



2CDC 252 180 F0b05

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

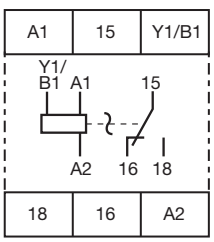
CT-TGD.22



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

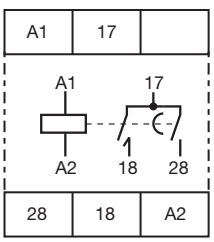
CT-TGD.12



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

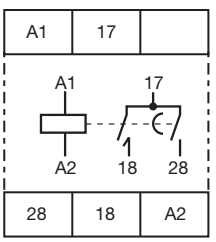
CT-SDD.22



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)

Electronic timers
CT-D range
Technical data

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

Type		CT-D with 1 c/o contact	CT-D with 2 c/o contacts
Input circuit - Supply circuit			
Rated control supply voltage U_S	A1-A2	24-240 V AC / 24-48 V DC	
	A1-A2	-	12-240 V AC/DC (CT-MFD.21)
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	AC/DC versions	DC or 47-63 Hz	
	AC versions	47-63 Hz	
Typical current / power consumption	24 V DC	- / 0.6 W	see data sheet
	230 V AC	- / 1.3 VA	see data sheet
	115 V AC	- / 1.3 VA	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	
Maximum cable length to the control input		50 m - 100 pF/m	
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 4.) 0.5-10 min	2.) 0.5-10 s 5.) 5-100 min 7.) 5-100 h 3.) 5-100 s 6.) 0.5-10 h
	4 time ranges 0.05 s - 10 min (CT-SDD, CT-SAD)	1.) 0.05-1 s	2.) 0.5-10 s 4.) 0.5-10 min 3.) 5-100 s
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)		△ t < ±0.5 %	
Star-delta transition time	CT-SDD	fixed 50 ms	
	CT-SAD	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 1 or 2 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 [1]
	DC12 (resistive) at 24 V	6 A	5 A
	DC13 (inductive) at 24 V	2 A	2 A [1]

[1] CT-MFD.21: Rated operational current AC15 (n/c contact) = 0.75 A; Rated operational current DC13 = 1 A

[2] CT-MFD.21 (n/c contact): Utilization category = C 300, max. continuous thermal current at C 300 = 2.5 A, Make / Break at C 300 = 1800/180 VA

Electronic timers
CT-D range
Technical data

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

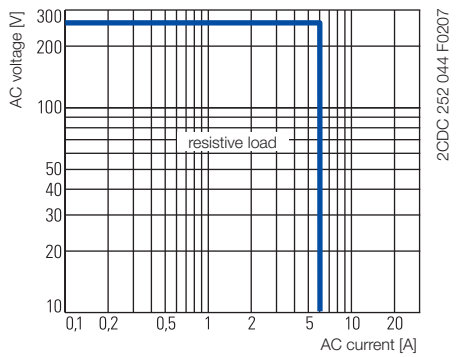
Type		CT-D with 1 c/o contact	CT-D with 2 c/o contacts
AC rating (UL 508)	Utilization category (Control Circuit Rating Code)	B 300	B 300 [2]
	max. rated operational voltage	300 V AC	
	max. continuous thermal current at B 300	5 A	5 A [2]
	max. making /breaking apparent power at B 300	3600/360 VA	3600/360 VA [2]
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			
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	enclosure / terminals	IP50 / IP20	
Electrical connection			
Wire size	fine-strand with(out) wire end ferrule	2 x 0.5-1.5 mm^2 (2 x 20-16 AWG) 1 x 0.5-2.5 mm^2 (1 x 20-14 AWG)	
	rigid	2 x 0.5-1.5 mm^2 (2 x 20-16 AWG) 1 x 0.5-4 mm^2 (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/s^2, 20 cycles, 10....150...10 Hz	
Shock (half-sine) (IEC/EN 60068-2-27)		100 m/s^2, 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, UL 508)		3	
Overvoltage category (IEC/EN 60664-1, VDE 0110, UL 508)		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	
electrostatic discharge	IEC/EN 61000-4-2	Level 3 (6 kV / 8 kV)	
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3 (10 V/m)	
electrical fast transient / burst	IEC/EN 61000-4-4	Level 3 (2 kV / 5 kHz)	
surge	IEC/EN 61000-4-5	Level 4 (2 kV L-L)	
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)	
Interference emission		IEC/EN 61000-6-3, IEC/EN 61000-6-4	
high-frequency radiated	IEC/CISPR 22, EN 55022	Class B	
high-frequency conducted	IEC/CISPR 22, EN 55022	Class B	

• **Approvals and marks** 1/4

Technical diagrams

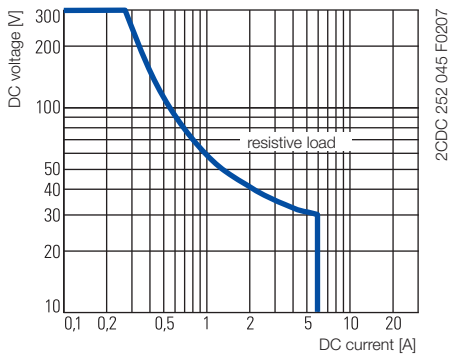
Load limit curves

AC load (resistive)

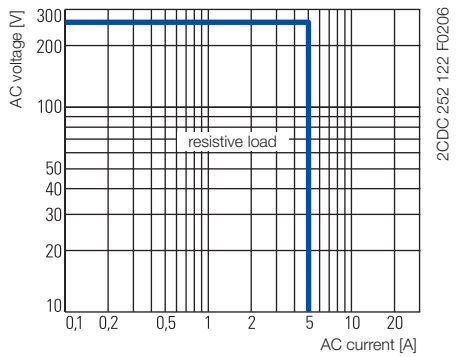


CT-D.1x

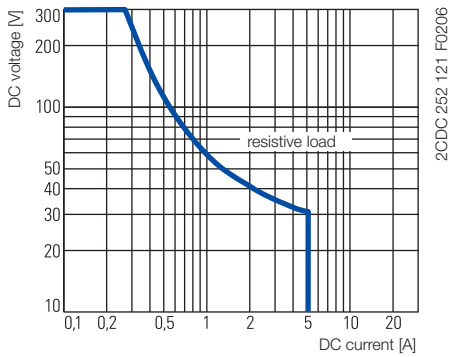
DC load (resistive)



CT-D.1x

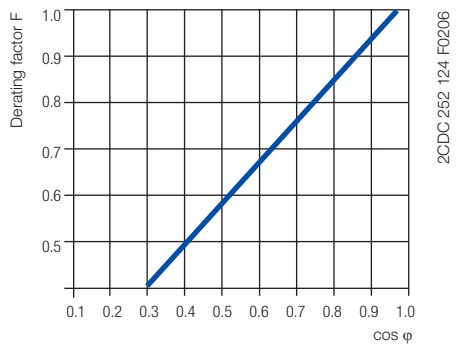


CT-D.2x

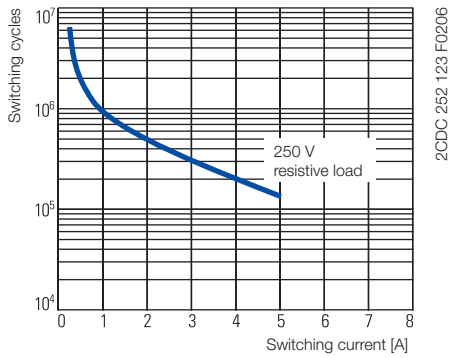


CT-D.2x

Derating factor F
for inductive AC load



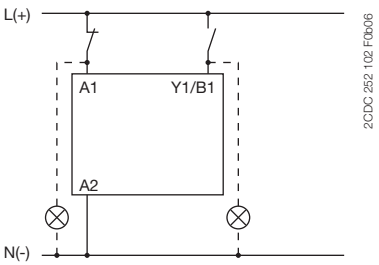
Contact lifetime



Electronic timers
CT-D range
Wiring notes, Dimensional drawings

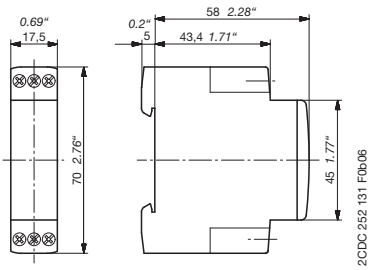
Wiring notes for devices with control input

A parallel load to the control input is possible

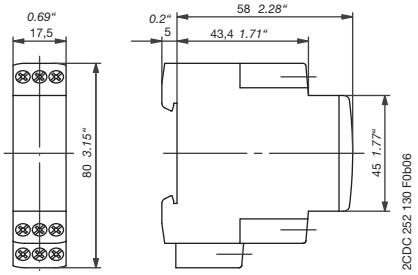


Dimensional drawings

dimensions in mm



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



CT-D devices with 2 c/o contacts

Electronic timers

CT-E range

Contents

Electronic timers
CT-E range
Benefits and advantages

CT-E range - the economy range

Perfect price-performance ratio for OEM users

- Diversity:
  - 2 multifunction timers
  - 56 single-function timers
  - 4 switching relays
- Control supply voltages
  - Single range: 110-130 V AC, 220-240 V AC
  - Dual range: 24 V AC/DC
  - Wide range: 24-240 V AC/DC (CT-MFE)
- Time ranges:
  - 5 single time 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 contact (250 V / 4 A) or solid-state output for high switching frequencies (thyristor 0.8 A)
- Wide connecting screws for easy and fast connection
- Switching relay CT-IRE for added switching contacts with either side-by-side or diagonal positioned connection terminals
- Approvals / Marks (depending on device)

Direct reading scales

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

LEDs for status indication

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

Connecting screws in M3 (Pozidrive 1)

Easy and fast tightening and release of the connecting screws with pozidrive, pan- or crosshead screwdriver.

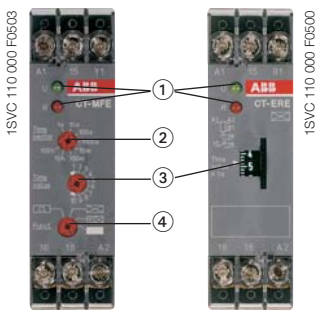
Operating controls

① LEDs for status indication

U - green LED:
control supply voltage applied

R2: red LED:
output relay energized

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



multifunctional single-functional

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

Electronic timers
CT-E range
Ordering details

CT-MFE

CT-ERE

CT-AHE

CT-ARE

Type	Rated control supply voltage	Time range	Control input	Order code	Pack. unit piece	Price 1 piece	Weight 1 piece kg / lb
Multifunction timer							
CT-MFE: 6 functions[1], 8 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs							
CT-MFE	24-240 V AC/DC	0.05 s - 100 h	■	**1SVR 550 029 R8100**	1		0.08 / 0.18
ON-delay timers ⊠							
CT-ERE: 1 c/o contact, 2 LEDs							
CT-ERE	24 V AC/DC, 220-240 V AC	0.1-10 s		**1SVR 550 107 R1100**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 107 R4100**	1		0.08 / 0.18
		3-300 s		**1SVR 550 107 R2100**	1		0.08 / 0.18
		0.3-30 min		**1SVR 550 107 R5100**	1		0.08 / 0.18
	110-130 V AC	0.1-10 s		**1SVR 550 100 R1100**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 100 R4100**	1		0.08 / 0.18
		3-300 s		**1SVR 550 100 R2100**	1		0.08 / 0.18
		0.3-30 min		**1SVR 550 100 R5100**	1		0.08 / 0.18
OFF-delay timers ▬							
CT-AHE: 1 c/o contact, 2 LEDs							
CT-AHE	24 V AC/DC	0.1-10 s	■	**1SVR 550 118 R1100**	1		0.08 / 0.18
		0.3-30 s	■	**1SVR 550 118 R4100**	1		0.08 / 0.18
		3-300 s	■	**1SVR 550 118 R2100**	1		0.08 / 0.18
	110-130 V AC	0.1-10 s	■	**1SVR 550 110 R1100**	1		0.08 / 0.18
		0.3-30 s	■	**1SVR 550 110 R4100**	1		0.08 / 0.18
		3-300 s	■	**1SVR 550 110 R2100**	1		0.08 / 0.18
	220-240 V AC	0.1-10 s	■	**1SVR 550 111 R1100**	1		0.08 / 0.18
		0.3-30 s	■	**1SVR 550 111 R4100**	1		0.08 / 0.18
		3-300 s	■	**1SVR 550 111 R2100**	1		0.08 / 0.18
CT-ARE: without auxiliary voltage, 1 c/o contact, 1 LED							
CT-ARE	24 V AC/DC, 220-240 V AC	0.1-10 s		**1SVR 550 127 R1100**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 127 R4100**	1		0.08 / 0.18
	110-130 V AC	0.1-10 s		**1SVR 550 120 R1100**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 120 R4100**	1		0.08 / 0.18

[1] Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Flasher starting with ON, Flasher starting with OFF, Pulse former

- Function diagrams 1/36
- Technical diagrams 1/30
- Connection diagrams 1/27
- Wiring notes 1/30
- Technical data 1/28
- Dimensional drawing 1/30

Electronic timers
CT-E range
Ordering details

CT-VWE

CT-AWE

CT-EBE

CT-YDE

Type	Rated control supply voltage	Time range	Control input	Order code	Pack. unit piece	Price 1 piece	Weight 1 piece kg / lb
Impulse-ON timers 1⎍⌧							
CT-VWE: 1 c/o contact, 2 LEDs							
CT-VWE	24 V AC/DC, 220-240 V AC	0.1-10 s		**1SVR 550 137 R1100**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 137 R4100**	1		0.08 / 0.18
		3-300 s		**1SVR 550 137 R2100**	1		0.08 / 0.18
	110-130 V AC	0.1-10 s		**1SVR 550 130 R1100**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 130 R4100**	1		0.08 / 0.18
		3-300 s		**1SVR 550 130 R2100**	1		0.08 / 0.18
Impulse-OFF timers 1⎍■							
CT-AWE: without auxiliary voltage, 1 c/o contact, 2 LEDs							
CT-AWE	24 V AC/DC	0.05-1 s		**1SVR 550 158 R3100**	1		0.08 / 0.18
	110-130 V AC			**1SVR 550 150 R3100**	1		0.08 / 0.18
	220-240 V AC			**1SVR 550 151 R3100**	1		0.08 / 0.18
CT-AWE: with auxiliary voltage, 1 c/o contact, 2 LEDs							
CT-AWE	24 V AC/DC	0.1-10 s	■	**1SVR 550 148 R1100**	1		0.08 / 0.18
		0.3-30 s	■	**1SVR 550 148 R4100**	1		0.08 / 0.18
		3-300 s	■	**1SVR 550 148 R2100**	1		0.08 / 0.18
	110-130 V AC	0.1-10 s	■	**1SVR 550 140 R1100**	1		0.08 / 0.18
		0.3-30 s	■	**1SVR 550 140 R4100**	1		0.08 / 0.18
		3-300 s	■	**1SVR 550 140 R2100**	1		0.08 / 0.18
	220-240 V AC	0.1-10 s	■	**1SVR 550 141 R1100**	1		0.08 / 0.18
		0.3-30 s	■	**1SVR 550 141 R4100**	1		0.08 / 0.18
		3-300 s	■	**1SVR 550 141 R2100**	1		0.08 / 0.18
Flasher, starting with OFF 1⎍■							
CT-EBE: with symmetrical ON & OFF times, 1 c/o contact, 2 LEDs							
CT-EBE	24 V AC/DC, 220-240 V AC	0.1-10 s		**1SVR 550 167 R1100**	1		0.08 / 0.18
	110-130 V AC			**1SVR 550 160 R1100**	1		0.08 / 0.18
Star-delta timers Δ⌧, Δ1⎍							
CT-YDE: ON-delayed, OFF-delayed without auxiliary voltage, 1 c/o contact, 2 LEDs							
CT-YDE	24 V AC/DC, 220-240 V AC	0.1-10 s		**1SVR 550 207 R1100**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 207 R4100**	1		0.08 / 0.18
		3-300 s		**1SVR 550 207 R2100**	1		0.08 / 0.18
	110-130 V AC	0.1-10 s		**1SVR 550 200 R1100**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 200 R4100**	1		0.08 / 0.18
		3-300 s		**1SVR 550 200 R2100**	1		0.08 / 0.18

- Function diagrams 1/36
- Technical diagrams 1/30
- Connection diagrams 1/27
- Wiring notes 1/30
- Technical data 1/28
- Dimensional drawing 1/30

Electronic timers
CT-E range
Ordering details

CT-SDE

CT-IRE

CT-MKE

CT-EKE

CT-AKE

Type	Rated control supply voltage	Time range	Control input	Order code	Pack. unit piece	Price 1 piece	Weight 1 piece kg / lb
CT-SDE: ON-delayed with fixed transition time, 1 n/c contact, 1 n/o contact, internally wired, 2 LEDs							
CT-SDE	24 V AC/DC, 220-240 V AC	0.3-30 s		**1SVR 550 217 R4100**	1		0.08 / 0.18
	110-130 V AC			**1SVR 550 210 R4100**	1		0.08 / 0.18
	380-415 V AC			**1SVR 550 212 R4100**	1		0.08 / 0.18
Switching relays							
CT-IRE: Impulse-OFF, A1/A2 diagonally, 1 c/o contact, 2 LEDs							
CT-IRE	24 V AC/DC			**1SVR 550 228 R9100**	1		0.08 / 0.18
	220-240 V AC/DC			**1SVR 550 221 R9100**	1		0.08 / 0.18
CT-IRE: Impulse-OFF, A1/A2 on top, 1 c/o contact, 2 LEDs							
CT-IRE	24 V AC/DC			**1SVR 550 238 R9100**	1		0.08 / 0.18
	220-240 V AC/DC			**1SVR 550 231 R9100**	1		0.08 / 0.18
Solid-state output / contactless							
Multifunction timer							
CT-MKE: 4 functions[1], solid-state output, functions and time range selection via external jumpers, 1 LED							
CT-MKE	24-240 V AC/DC	0.1-10 s, 3-300 s		**1SVR 550 019 R0000**	1		0.08 / 0.18
ON-delay timers							
CT-EKE: solid-state output, 1 LED							
CT-EKE	24-240 V AC/DC	0.1-10 s		**1SVR 550 509 R1000**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 509 R4000**	1		0.08 / 0.18
		3-300 s		**1SVR 550 509 R2000**	1		0.08 / 0.18
OFF-delay timers							
CT-AKE: solid-state output, 1 LED							
CT-AKE	24-240 V AC	0.1-10 s		**1SVR 550 519 R1000**	1		0.08 / 0.18
		0.3-30 s		**1SVR 550 519 R4000**	1		0.08 / 0.18
		3-300 s		**1SVR 550 519 R2000**	1		0.08 / 0.18

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.

[1] Functions: ON-delay (AC/DC), Impulse-ON (AC only), Flasher starting with ON (AC only), Flasher starting with OFF (AC only)

- Function diagrams 1/36
- Technical diagrams 1/30
- Connection diagrams 1/27
- Wiring notes 1/30
- Technical data 1/28
- Dimensional drawing 1/30

Electronic timers
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.

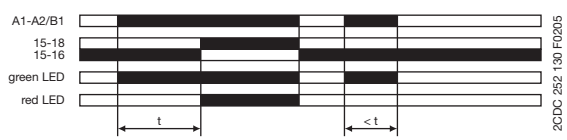
⊠ ON-delay (Delay on make) CT-ERE, CT-MFE

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.



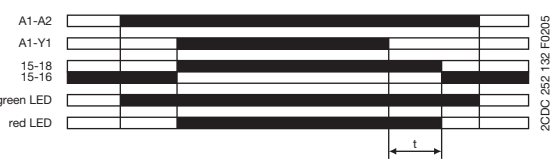
t = adjusted time delay

▬ 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

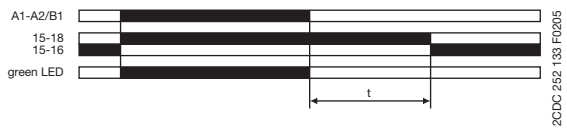
OFF-delay, without auxiliary voltage (true delay on break) CT-ARE

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

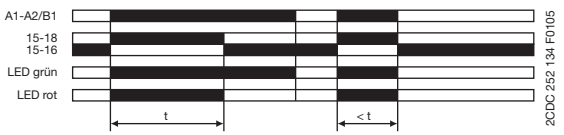
Impulse-ON (Interval) CT-VWE, CT-MFE

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.

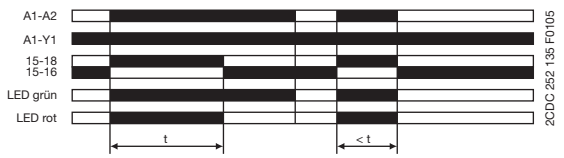
The control input **A1-Y1** of the CT-MFE has to be jumpered if this timing function is configured.

CT-VWE:



t = adjusted pulse time

CT-MFE:



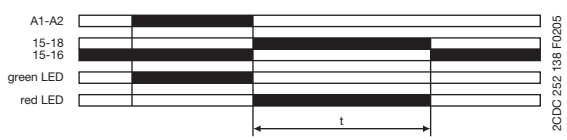
t = adjusted pulse time

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.

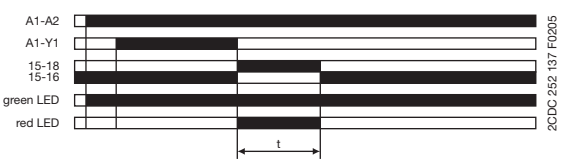


t = adjusted pulse time

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

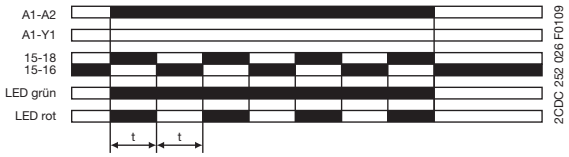
Electronic timers
CT-E range
Function diagrams

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

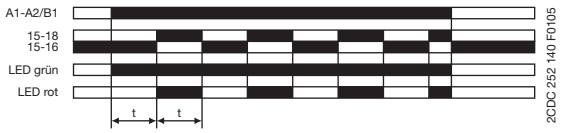
Flasher starting with OFF (Recycling equal times, OFF first) CT-EBE, CT-MFE

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.

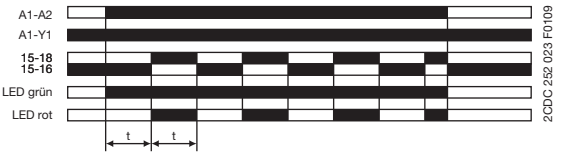
Control input **A1-Y1** of the CT-MFE has to be jumpered when this function is selected.

CT-EBE:



t = adjusted flashing time

CT-MFE:



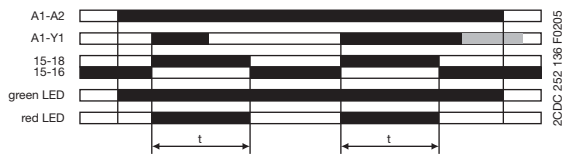
t = adjusted flashing time

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.

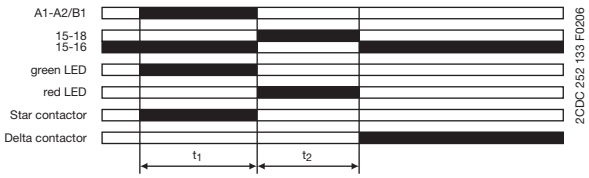
Applying control supply voltage, energizes the output relay. The output relay de-energizes if supply voltage is interrupted.

Star-delta change-over
CT-YDE

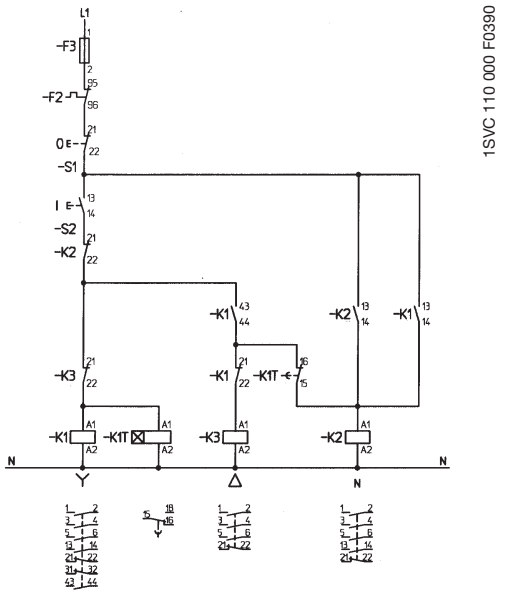
Applying control supply voltage, energizes the star contactor (K1) and the line contactor (K2) and begins the set starting time.

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

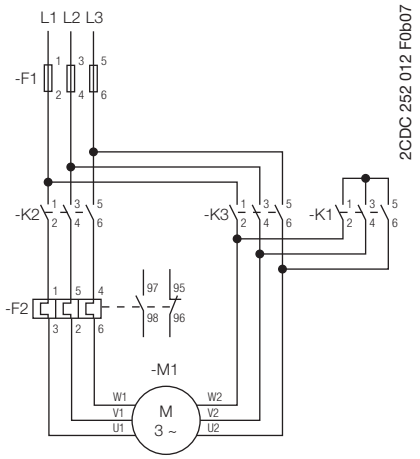
When the transition time is complete, contact **15-16** energizes the delta contactor (K3).



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



Control circuit diagram



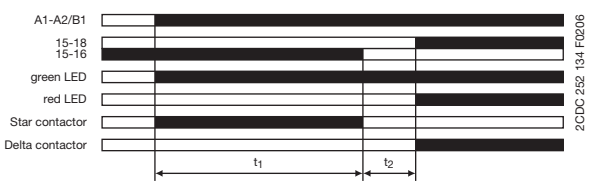
Power circuit diagram

Star-delta change-over
CT-SDE

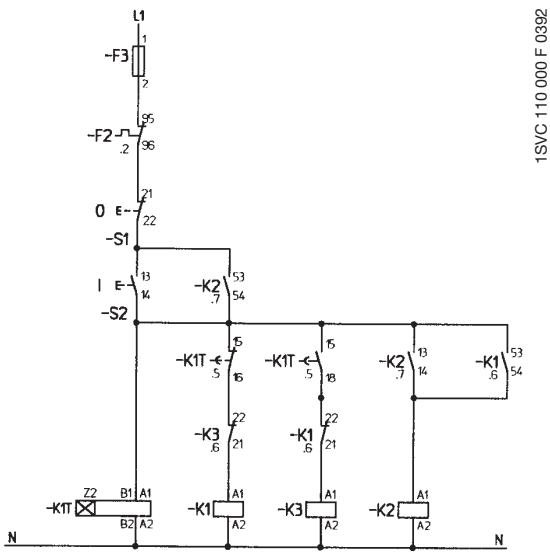
Applying control supply voltage, energizes the star contactor (K1) and the line contactor (K2) and begins the set starting time.

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

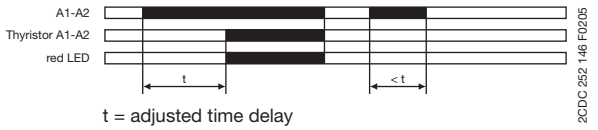
Electronic timers
CT-E range
Function diagrams

Multifunction timer CT-MKE

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

ON-delay (Delay on Make)

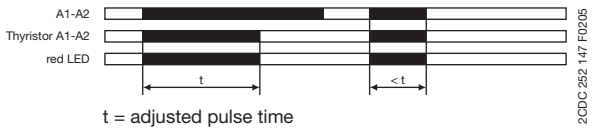
Without external connection. Timing begins when control supply voltage is applied to terminal **A1** and the load connected in series with **A2**. When the selected time delay is complete, the load connected to **A1-A2** energizes. If control supply voltage is interrupted, the load de-energizes and the 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)

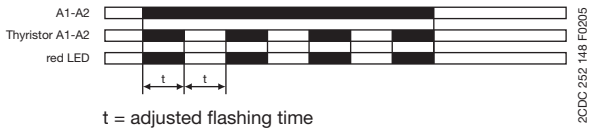
External connection **X1-X4** required. The load energizes and timing starts when control supply voltage is applied to terminal **A1** and the load connected in series with **A2**. When the selected time delay is complete, the load de-energizes. Interrupting control supply voltage before the time delay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



t = adjusted pulse time

Flasher, starting with ON

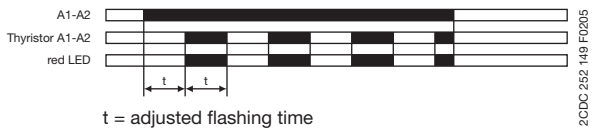
External connection **X1-X4** and **X2-X4** required. When control supply voltage is applied to terminal **A1** and the load connected in series with **A2**, the load energizes and de-energizes with the selected ON & OFF times. The ON & OFF times are equal. The cycle starts with an ON time first (load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

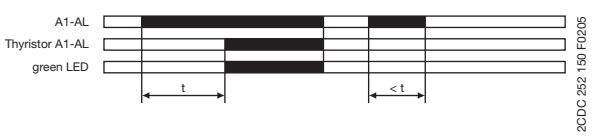
X_3-X_4 jumpered: 0,1-10 s X_3-X_4 open: 3-300 s

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.

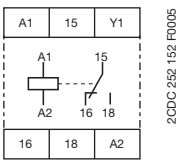
t = adjusted time delay

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.

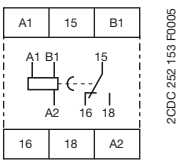
Electronic timers
CT-E range
Connection diagrams

CT-MFE



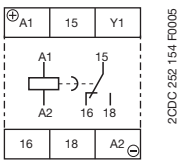
A1-A2 Supply: 24-240 V AC/DC
A1-Y1 Control input
15-16/18 c/o contact

CT-ERE



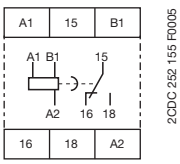
A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

CT-AHE [1)]



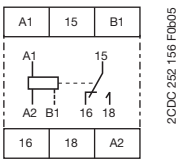
A1(+)-A2(-) Supply: 24 V AC/DC or 110-240 V AC or 220-240 V AC
A1-Y1 Control input
15-16/18 c/o contact

CT-ARE



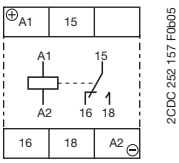
A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

1 CT-VWE



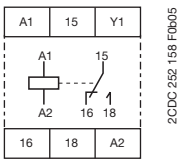
A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

1 CT-AWE



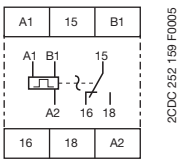
Device without aux. voltage
A1(+)-A2(-) Supply: 24 V AC/DC or 110-240 V AC or 220-240 V AC
15-16/18 c/o contact

1 CT-AWE [1)]



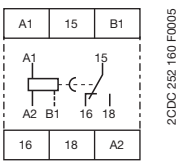
Device with aux. voltage
A1-A2 Supply: 24 V AC/DC or 110-240 V AC or 220-240 V AC
A1-Y1 Control input
15-16/18 c/o contact

CT-EBE



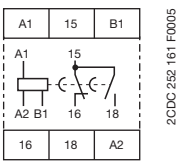
A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

CT-YDE



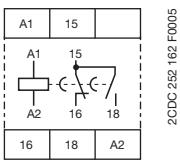
A1-A2 Supply: 220-240 V AC or 110-130 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

CT-SDE



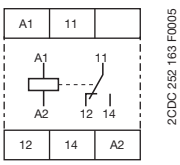
Device:
1SVR 550 217 R4100
A1-A2 Supply: 220-240 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 c/o contact

CT-SDE



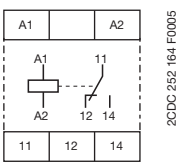
Devices:
1SVR 550 210 R4100, 1SVR 550 212 R4100
A1-A2 Supply: 110-130 V AC or 380-415 V AC
15-16/18 c/o contact

CT-IRE



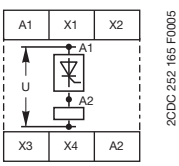
Supply terminals diagonally positioned
A1-A2 Supply: 24 V AC/DC or 220-240 V AC/DC
11-12/14 c/o contact

CT-IRE



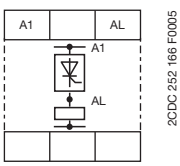
Supply terminals on one side of the device
A1-A2 Supply: 24 V AC/DC or 220-240 V AC/DC
11-12/14 c/o contact

CT-MKE



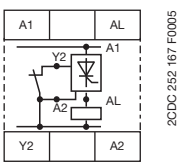
A1-A2 Supply: 24-240 V AC/DC
A1-A2 Thyristor
X1-X4 Timing function adjustment
X2-X4 Timing function adjustment
X3-X4 Time range adjustment
(Details see function diagrams)

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** 1/30

Electronic timers
CT-E range
Technical data

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

Type		CT-E (relays)	CT-E (solide-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	
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 U_S	-
Timing circuit			
Time ranges	1 of 5 time ranges per singlefunction 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	-
Indication of operational states			
Control supply voltage	U: green LED	⌜⌝: control supply voltage applied	
Relay status	R: red LED	⌜⌝: output relay energized	
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 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	-
	DC12 (resistive) at 24 V	4 A	-
	DC13 (inductive) at 24 V	2 A	-

[1] CT-MFE: yes / no

Electronic timers
CT-E range
Technical data

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

Type			CT-E (relays)	CT-E (solide-state)
AC rating (UL 508)	Utilization category (Control Circuit Rating Code)		B 300	-
	max. rated operational voltage		300 V AC	-
	max. continuous thermal current at B 300		5 A	-
	max. making /breaking apparent power at B 300		3600/360 VA	-
Mechanical lifetime			30 x 10^6 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 T_a = 20 °C CT-EKE, CT-AKE: 0.7 A
Load current reduction / Derating			-	10 mA/°C
Maximum surge current			-	CT-MKE: ≤ 20 A for t ≤ 20 ms CT-EKE, CT-AKE: ≤ 15 A
Voltage drop in connected state			-	≤ 3 V
Cable length between solid-state timer and connected load at 50 Hz and a cable capacity of 100 pF/m :		at 24 V AC	-	220 m / 22 nF
		at 42 V AC	-	100 m / 10 nF
		at 60 V AC	-	65 m / 6.5 nF
		at 110 V AC	-	50 m / 5 nF
		at 240 V AC	-	22 m / 2.2 nF
General data				
Duty time			100 %	
Dimensions (W x H x D)			22.5 x 78.5 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		enclosure / 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)	
		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)	
Tightening torque			10 mm (0.39 in)	
Tightening torque			0.6-0.8 Nm	
Environmental data				
Ambient temperature range		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 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	
Test voltage between all isolated circuits (type test)			2.5 kV, 50 Hz, 1 s	
Rated insulation voltage U_i between supply circuit, control circuit and output circuit (VDE 0110, IEC 60947-1)			300 V (supply up to 240 V)	
			500 V (supply up to 440 V)	
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	

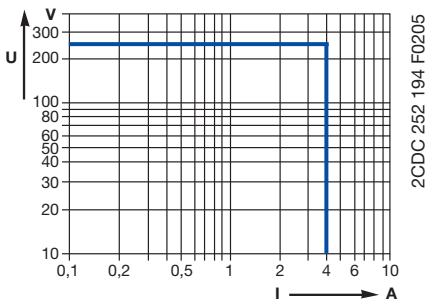
Electronic timers
CT-E range
Technical diagrams, Wiring notes, Dimensional drawing

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

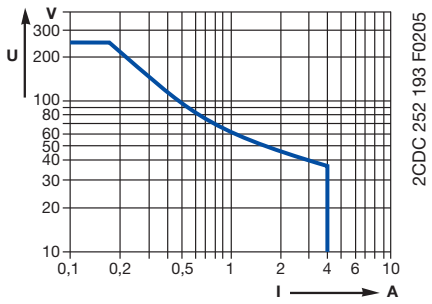
Type		CT-E (relays)	CT-E (solide-state)
Electromagnetic compatibility			
Interference immunity to		IEC/EN 61000-6-1, IEC/EN 61000-6-2	
electrostatic discharge	IEC/EN 61000-4-2	Level 3 (6 kV / 8 kV)	
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3 (10 V/m)	
electrical fast transient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

Load limit curves

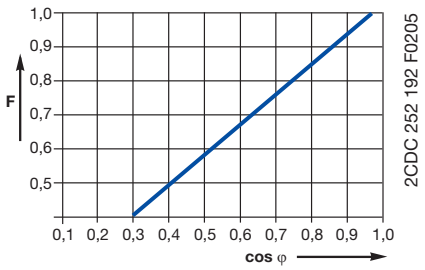
AC load (resistive)



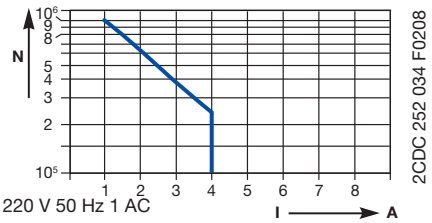
DC load (resistive)



Derating factor F for inductive AC load



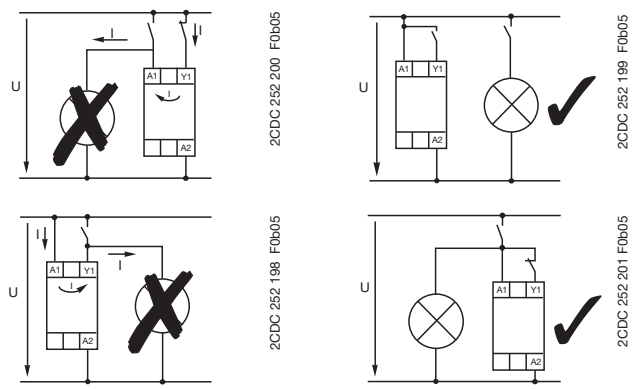
Contact lifetime



220 V 50 Hz 1 AC
360 cycles/h

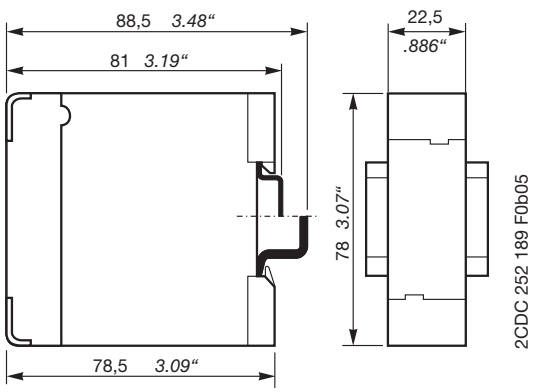
Wiring notes

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



Dimensional drawing

Dimensions in mm



• **Approvals and marks** 1/4

Electronic timers

CT-S range

Contents

CT-S range - the high end timers

universal and economic


2CDC 255 057 F0b06

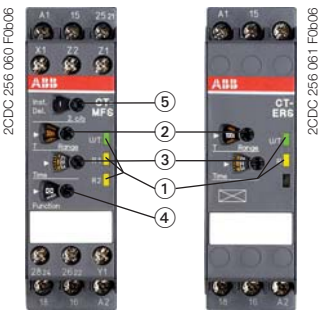
- Diversity:
  - 8 multifunction timers
  - 13 single-function timers
  - 8 switching relays
- Control supply voltages:
  - Multi range: 24-48 V DC, 24-240 V AC
  - Wide range: 24-240 V AC/DC
  - Single range: 380-440 V AC
- Devices with:
  - 1 or 2 c/o contacts
  - 2nd c/o contact can be selected as 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

Operating controls

① LEDs for status indication
U/T / U - green LED:
control supply voltage applied
timing
R / R1 / R2 - yellow LED:
1. / 2. output relay energized

② Time range adjustment
③ Fine adjustment of the time delay
④ Preselection of the timing function
⑤ Set the 2nd c/o contact as an instantaneous contact



Time range preselection and fine adjustment

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

2CDC 253 062 F0006

2CDC 253 063 F0006

LEDs for status indication

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

Double-chamber cage connecting terminals

Double-chamber cage connecting terminals provide connection of wires up to 2 x 2.5 mm² (2 x 14 AWG), rigid or fine-strand, with or without wire end ferrules. Potential distribution does not require additional terminals.


2CDC 253 010 F0003


1SVC 110 000 F0507

Remote potentiometer connection

The CT-S range offers the possibility of connecting a remote potentiometer for the fine adjustment of the time delay. When an external potentiometer is connected, the internal, front-face potentiometer is disabled.

Integrated marker label

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

2CDC 253 064 F0006


2CDC 253 065 F0006

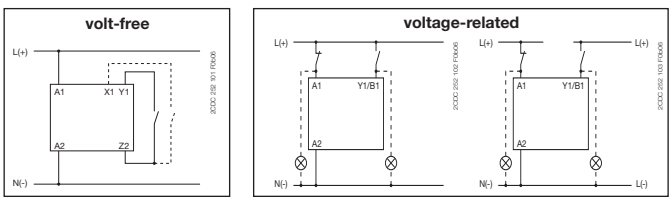
Sealable transparent cover

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

Control input with volt-free or voltage-related triggering [1)]

The new CT-S range offers two types of devices:
one with volt-free and one with voltage-related triggering.

The control inputs of the devices with voltage-related triggering are capable of switching a parallel load and are not polarized. They can be powered either by the control supply voltage applied to A1 or by another voltage out of the rated control supply voltage range.



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

Electronic timers
CT-S range
Ordering details

CT-MVS.21

CT-MXS.22

CT-MFS.21

CT-MBS.22

CT-WBS.22

Type	Rated control supply voltage	Control input	Remote potentio-meter connection	2nd c/o cont. selec-table as inst. contact	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg / lb
Multifunction timers								
CT-MVS: 11 functions [1], 10 time ranges (0.05 s- 300 h), 2 c/o contacts, 3 LEDs – 40 °C NEW EXTENDED TEMPERATURE								
CT-MVS.21	24-240 V AC/DC	■	1x	•	**1SVR 630 020 R0200**	1		0.137 / 0.302
CT-MVS: 11 functions [1], 10 time ranges (0.05 s- 300 h), 2 c/o contacts, 2 LEDs								
CT-MVS.22	24-48 V DC, 24-240 V AC	■			**1SVR 630 020 R3300**	1		0.131 / 0.289
CT-MVS.23	380-440 V AC	■			**1SVR 630 021 R2300**	1		0.135 / 0.298
CT-MVS: 10 functions [2], 10 time ranges (0.05 s- 300 h), 1 c/o contact, 2 LEDs								
CT-MVS.12	24-48 V DC, 24-240 V AC	■			**1SVR 630 020 R3100**	1		0.101 / 0.223
CT-MXS: 5 functions [3], 2 x 10 time ranges (0.05 s- 300 h), 2 c/o contacts, 2 LEDs								
CT-MXS.22	24-48 V DC, 24-240 V AC	■	2x		**1SVR 630 030 R3300**	1		0.131 / 0.289
CT-MFS: 10 functions [4], 10 time ranges (0.05 s- 300 h), 2 c/o contacts, 3 LEDs – 40 °C NEW EXTENDED TEMPERATURE								
CT-MFS.21	24-240 V AC/DC	□/□	1x	•	**1SVR 630 010 R0200**	1		0.134 / 0.295
CT-MBS: 10 functions [4], 10 time ranges (0.05 s- 300 h), 2 c/o contacts, 3 LEDs								
CT-MBS.22	24-48 V DC, 24-240 V AC	□	1x	•	**1SVR 630 010 R3200**	1		0.129 / 0.284
Impulse and flasher timer								
CT-WBS: 7 functions [5], 10 time ranges (0.05 s- 300 h), 2 c/o contacts, 2 LEDs								
CT-WBS.22	24-48 V DC, 24-240 V AC				**1SVR 630 040 R3300**	1		0.115 / 0.254

■ Control input with voltage-related triggering

□ Control input with volt-free triggering

[1] Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Symmetrical ON- and OFF-delay, Flasher starting with ON or OFF, Star-delta change-over with impulse, Pulse former, Accumulative ON-delay, ON/OFF-function

[2] Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Symmetrical ON- and OFF-delay, Flasher starting with ON or OFF, Pulse former, Accumulative ON-delay, ON/OFF-function

[3] Functions: Select function via DIP switches behind the marker label on the front of the unit, asymmetrical ON- and OFF-delay, Impulse-ON/OFF, Pulse generator starting with ON or OFF, Single pulse generator, ON/OFF-function

[4] Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Symmetrical ON- and OFF-delay, Flasher starting with ON, Flasher starting with OFF, Star-delta change-over with impulse, Pulse former, ON/OFF-function

[5] Functions: Flasher starting with ON, Flasher starting with OFF, Impulse-ON, ON-delay, fixed impulse with adjustable time delay, Adjustable impulse with fixed time delay, ON/OFF-function

- Accessories 1/36
- Technical data..... 1/49
- Function diagrams 1/37
- Technical diagrams 1/51
- Connection diagrams..... 1/46
- Wiring notes, Dimensional drawing 1/52

Electronic timers
CT-S range
Ordering details

CT-ERS.21

CT-APS.12

CT-AHS.22

CT-VBS.17

CT-SDS.23

Type	Rated control supply voltage	Control input	Remote potentio-meter connection	2nd c/o cont. selec-table as inst. contact	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg / lb
ON-delay timers ⋈								
CT-ERS: 10 time ranges (0.05 s- 300 h), 2 c/o contacts, 2 LEDs –40 °C NEW EXTENDED TEMPERATURE								
CT-ERS.21	24-240 V AC/DC				**1SVR 630 100 R0300**	1		0.121 / 0.267
CT-ERS.22	24-48 V DC, 24-240 V AC				**1SVR 630 100 R3300**	1		0.113 / 0.249
CT-ERS: 10 time ranges (0.05 s- 300 h), 1 c/o contact, 2 LEDs								
CT-ERS.12	24-48 V DC, 24-240 V AC				**1SVR 630 100 R3100**	1		0.097 / 0.214
OFF-delay timers ▬								
CT-APS: 10 time ranges (0.05 s- 300 h), 2 c/o contacts, 2 LEDs –40 °C NEW EXTENDED TEMPERATURE								
CT-APS.21	24-240 V AC/DC	■			**1SVR 630 180 R0300**	1		0.136 / 0.306
CT-APS.22	24-48 V DC, 24-240 V AC	■			**1SVR 630 180 R3300**	1		0.128 / 0.282
CT-APS: 10 time ranges (0.05 s- 300 h), 1 c/o contact, 2 LEDs								
CT-APS.12	24-48 V DC, 24-240 V AC	■			**1SVR 630 180 R3100**	1		0.101 / 0.223
CT-AHS: 10 time ranges (0.05 s- 300 h), 2 c/o contacts, 2 LEDs								
CT-AHS.22	24-48 V DC, 24-240 V AC	□			**1SVR 630 110 R3300**	1		0.125 / 0.276
CT-ARS: without auxiliary voltage, 7 time ranges (0.05 s- 10 min), 1 c/o contact, 1 LED								
CT-ARS.11	24-240 V AC/DC				**1SVR 630 120 R3100**	1		0.119 / 0.262
CT-ARS: without auxiliary voltage, 7 time ranges (0.05 s- 10 min), 2 c/o contacts, 1 LED								
CT-ARS.21	24-240 V AC/DC				**1SVR 630 120 R3300**	1		0.137 / 0.302
CT-VBS: without auxiliary voltage, for DC contactor coils								
CT-VBS.17	100-127 V AC				**1SVR 430 261 R6000**	1		0.123 / 0.271
CT-VBS.18	200-240 V AC				**1SVR 430 261 R5000**	1		0.118 / 0.260
Star-delta timers ◬								
CT-SDS: 7 time ranges (0.05 s- 10 min), 50 ms transition time, 2 n/o contacts, 3 LEDs								
CT-SDS.22	24-48 V DC, 24-240 V AC				**1SVR 630 210 R3300**	1		0.105 / 0.231
CT-SDS.23	380-440 V AC				**1SVR 630 211 R2300**	1		0.111 / 0.245

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

- Accessories 1/36
- Technical data..... 1/49
- Function diagrams 1/37
- Technical diagrams 1/51
- Connection diagrams..... 1/46
- Wiring notes, Dimensional drawing 1/52

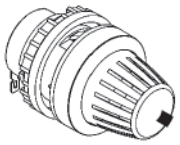
Electronic timers
CT-S range
Ordering details

CT-IRS.35

Type	Rated control supply voltage	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg / lb
Switching relays ▭					
CT-IRS: 1 c/o contact, 2 LEDs					
CT-IRS.16	24 V AC/DC	**1SVR 430 220 R9100**	1		0.121 / 0.267
CT-IRS.14	110-240 V AC	**1SVR 430 221 R7100**	1		0.126 / 0.278
CT-IRS: 2 c/o contacts, 1 LED					
CT-IRS.26	24 V AC/DC	**1SVR 430 220 R9300**	1		0.135 / 0.298
CT-IRS.24	110-240 V AC	**1SVR 430 221 R7300**	1		0.141 / 0.311
CT-IRS: 2 c/o contacts with gold-plated contacts, 1 LED					
CT-IRS.26G	24 V AC/DC	**1SVR 430 230 R9300**	1		0.147 / 0.324
CT-IRS.24G	110-240 V AC	**1SVR 430 231 R7300**	1		0.150 / 0.331
CT-IRS: 3 c/o contacts, 1 LED					
CT-IRS.36	24 V AC/DC	**1SVR 430 220 R9400**	1		0.159 / 0.351
CT-IRS.35	220-240 V AC	**1SVR 430 221 R1400**	1		0.161 / 0.355

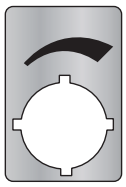
- Accessories 1/36
- Technical data..... 1/49
- Function diagrams 1/37
- Technical diagrams 1/51
- Connection diagrams..... 1/46
- Wiring notes, Dimensional drawing 1/52

Electronic timers
CT-S range
Ordering details - Accessories

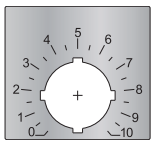


MT-x50B

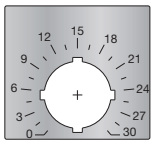
30 mm adapters



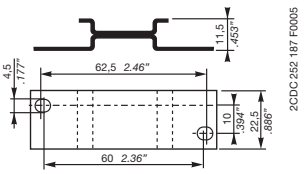
Marker label
29.6 x 44.5 mm



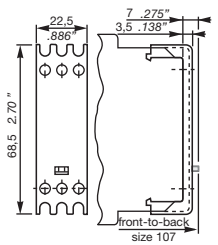
Marker label
with scale 0-10
48.5 x 44.5 mm



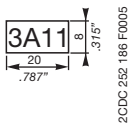
Marker label
with scale 0-30
48.5 x 44.5 mm



ADP.01



COV.01



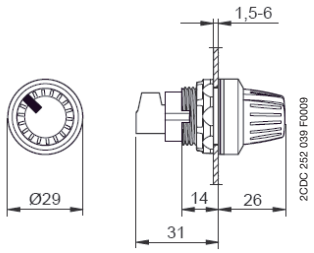
MAR.01

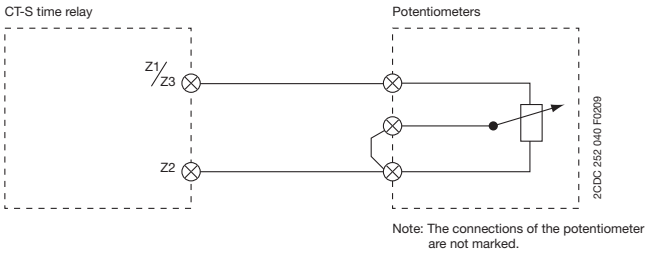
Accessories

Remote potentiometer

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

Type	Material	Diameter in mm	Order code	Pack.-unit pieces	Price 1 piece	Weight 1 piece g / oz
MT-150B	Plastic, black	22.5	**1SFA 611 410 R1506**	1		0.040
MT-250B	Plastic, chrome	22.5	**1SFA 611 410 R2506**	1		0.040
MT-350B	Metal, chrome	22.5	**1SFA 611 410 R3506**	1		0.048





Note: Technical specifications see data sheet

30 mm adapter for attaching the potentiometer 22.5 mm in 30.5 mm mounting hole

Type	Material	Order code	Pack.-unit pieces	Price 1 piece	Weight 1 piece g / oz
KA1-8029	Plastic, black	**1SFA 616 920 R8029**	1		
KA1-8030	Metal, chrome	**1SFA 616 920 R8030**	1		

Marker label

Type	Caption	Order code	Pack.-unit pieces	Price 1 piece	Weight 1 piece g / oz
SK 615 562-87	Symbol (see illustration)	**GJD6 155 620 R0087**	1		0.002
SK 615 562-88	Scale 0 - 10	**GJD6 155 620 R0088**	1		0.002
MA16-1060	Scale 0 - 30	**1SFA 611 940 R1060**	1		0.002

Type	for devices	Width in mm	Order code	Pack.-unit pieces	Price 1 piece	Weight 1 piece g / oz
Adapter for screw mounting						
ADP.01	CT-S	22,5	**1SVR 430 029 R0100**	1		18.4/0.65
Sealable transparent cover						
COV.01	CT-S	22,5	**1SVR 430 005 R0100**	1		5.2/0.18

Marker label

Type	for devices	for devices	Order code	Pack.-unit pieces	Price 1 piece	Weight 1 piece g / oz
MAR.01	CT-S	without DIP switch	**1SVR 366 017 R0100**	10		0.19/0.007
MAR.02	CT-S	with DIP switch	**1SVR 430 043 R0000**	10		0.13/0.005

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**.

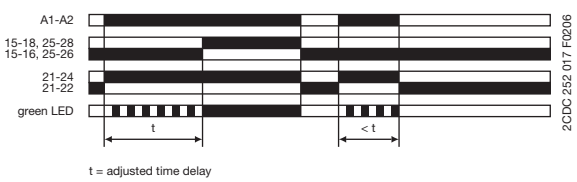
Function of the yellow LEDs:

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

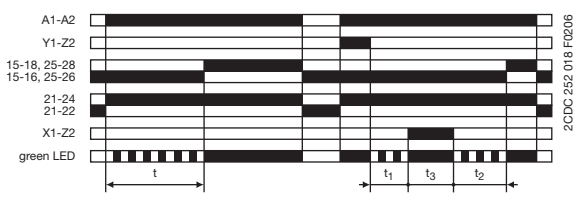
This function requires continuous control supply voltage for timing.
Timing begins when control supply voltage is applied. The green LED flashes during timing. When the selected time delay is complete, the output relay energizes and the flashing green LED turns steady.
If control supply voltage is interrupted,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

Electronic timers
CT-S range
Function diagrams

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

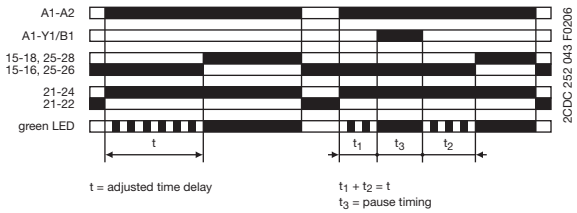
This function requires continuous control supply voltage for timing.

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.

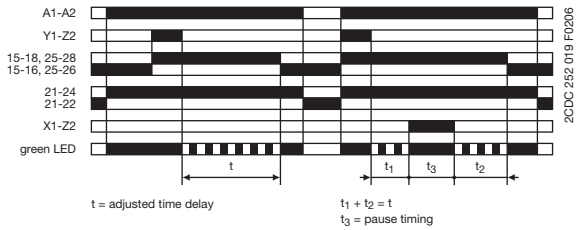
If control input **Y1-Z2** is closed, the output relay energizes immediately. If control input **Y1-Z2** is opened, the time delay starts. The green LED flashes during timing. When the selected time delay is complete, the output relay de- energizes and the flashing green LED turns steady.

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.



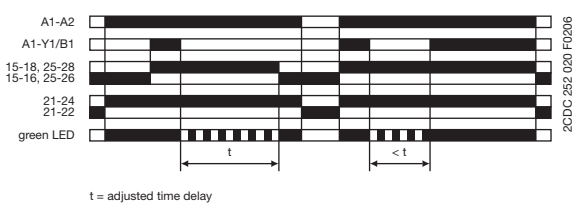
OFF-delay with auxiliary voltage (Delay on break) CT-MVS, CT-APS

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.

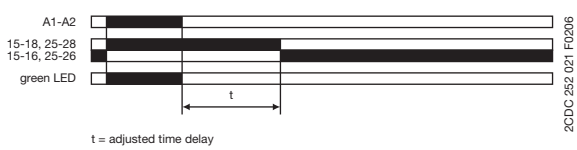


OFF-delay without auxiliary voltage (True delay on break) CT-ARS

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.

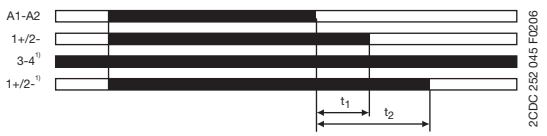
For correct operation of the unit, it is necessary to complete the minimum energizing time. As soon as timing starts, the LED turns off.



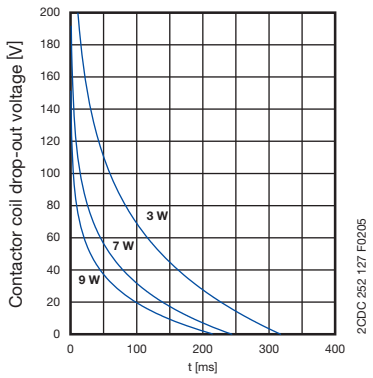
OFF-delay without auxiliary voltage for DC contactor coils CT-VBS

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

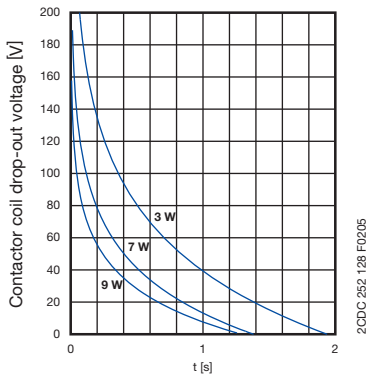
If control supply voltage is disconnected, the DC contactor coil remains energized for a short time delay. This time delay depends on the coil drop-out voltage and on the wattage of the contactor coil.



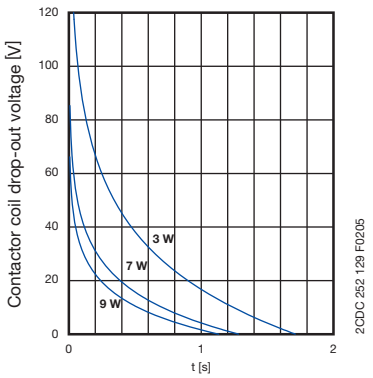
t_1 = OFF-delay (without jumper between terminals 3 and 4 [1])
t_2 = OFF-delay (with jumper between terminals 3 and 4 [1])
[1]) only for version 200-240 V AC



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

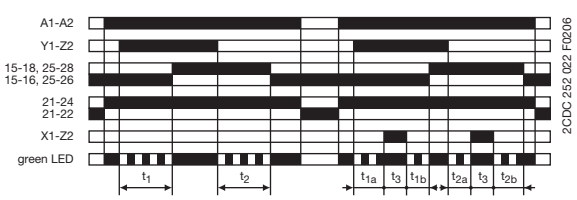
This function requires continuous control supply voltage for timing.

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

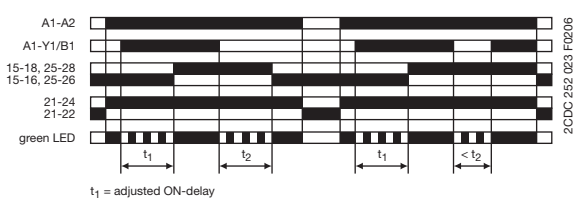
Symmetrical ON-delay and OFF-delay (Symmetrical delay on make and delay on break) CT-MVS

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
$t_1 = t_2$

Electronic timers
CT-S range
Function diagrams

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

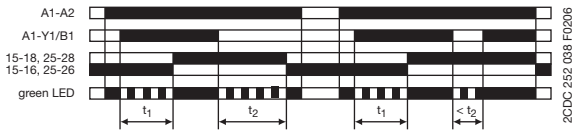
This function requires continuous control supply voltage for timing.

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.



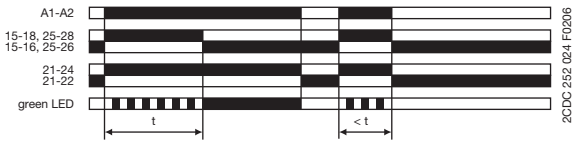
t_1 = adjusted ON-delay
t_2 = adjusted OFF-delay
t_1 and t_2 independently adjustable

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.

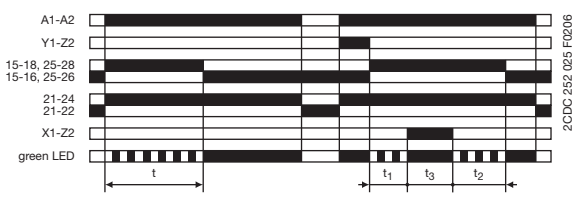
The output relay energizes immediately when control supply voltage is applied and de-energizes after the set pulse time is complete. If control input **Y1-Z2** is open, timing begins when control supply voltage is applied. Or, if control supply voltage is already applied, opening control input **Y1-Z2**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

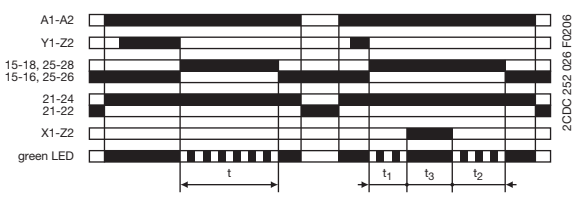
If control supply voltage is applied, opening control input **Y1-Z2** energizes the output relay immediately and starts timing. The green LED flashes during timing. When the selected pulse time is complete, the output relay de-energizes and the flashing green LED turns steady.

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

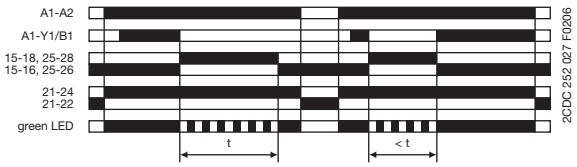
Impulse-OFF with auxiliary voltage (Trailing edge interval) CT-MVS

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

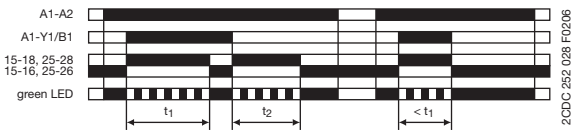
Impulse-ON and impulse-OFF (Interval and trailing edge interval) CT-MXS

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.

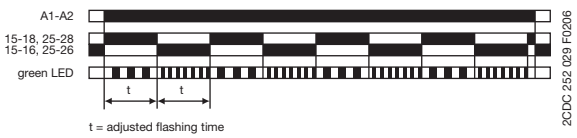


t_1 = adjusted pulse time 1
t_2 = adjusted pulse time 2

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.

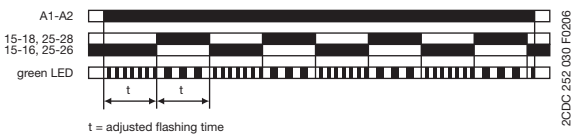


t = adjusted flashing time

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

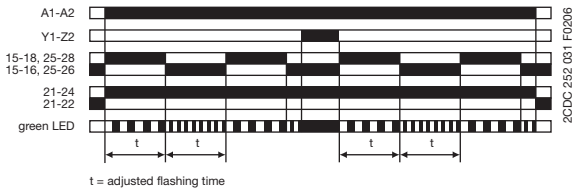
Electronic timers
CT-S range
Function diagrams

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.



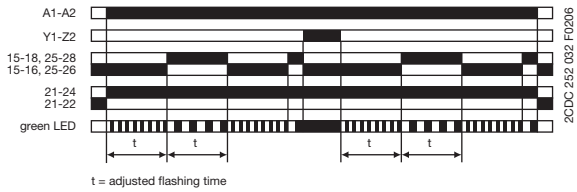
t = adjusted flashing time

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.



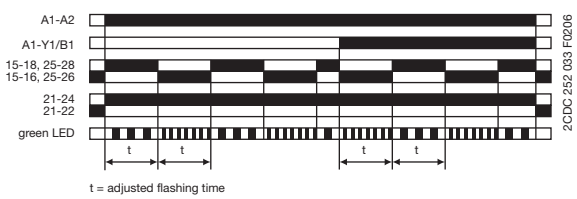
t = adjusted flashing time

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.



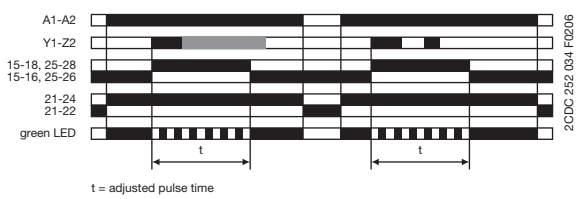
t = adjusted flashing time

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

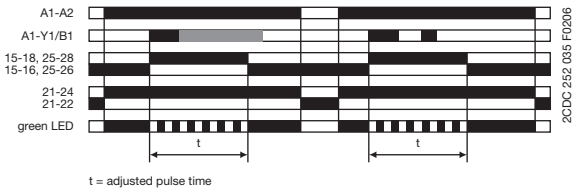
Electronic timers
CT-S range
Function diagrams

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

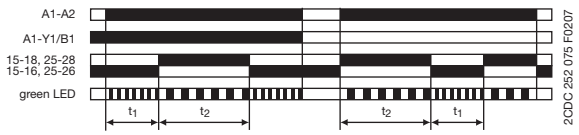
Pulse generator, starting with the ON or OFF time (Recycling unequal times, ON or OFF first) CT-MXS

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

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

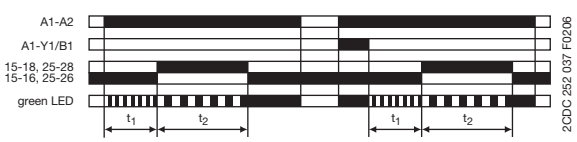
This function requires continuous control supply voltage for timing.

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.



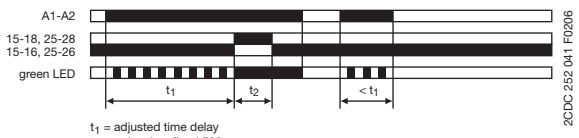
t_1 = adjusted OFF time
t_2 = adjusted ON time
t_1 and t_2 independently adjustable

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

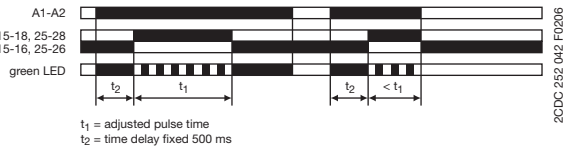
Electronic timers
CT-S range
Function diagrams

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

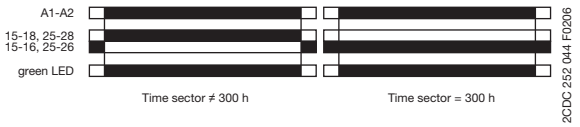
ON/OFF-Function CT-MFS, CT-MBS, CT-MVS, CT-MXS, CT-WBS

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.

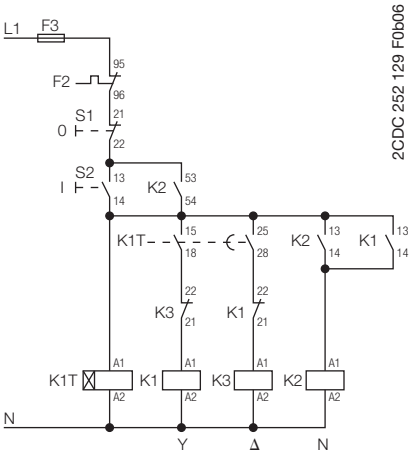
n = 1, 2 or 3

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

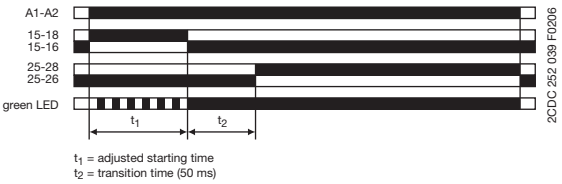
This function requires continuous control supply voltage for timing.

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.

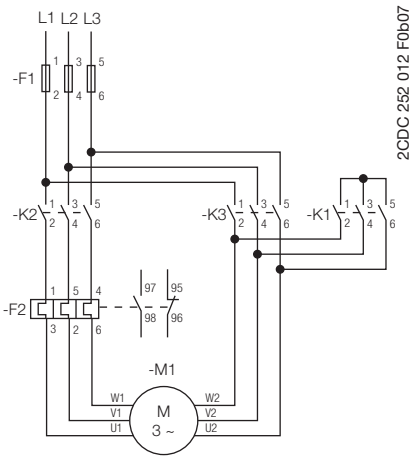
Now, the fixed transition time t_2 of 50 ms starts. When the transition time is complete, the second c/o contact energizes the delta contactor connected to terminals **25-28**. The delta contactor remains energized as long as control supply voltage is applied to the unit.



Control circuit diagram



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



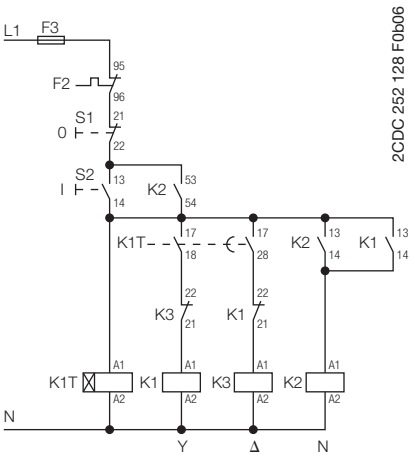
Power circuit diagram

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

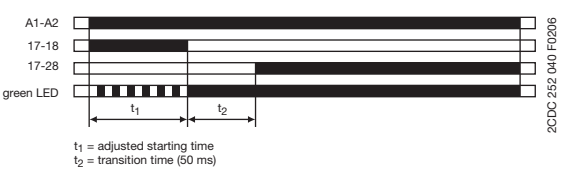
This function requires continuous control supply voltage for timing.

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.



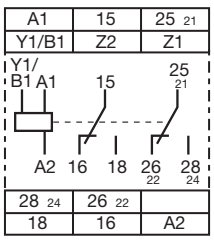
Control circuit diagram



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

Electronic timers
CT-S range
Connection diagrams

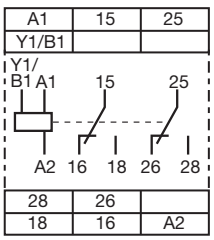
CT-MVS.21



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

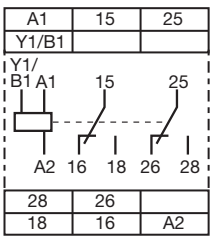
CT-MVS.22



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

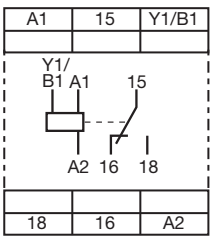
CT-MVS.23



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

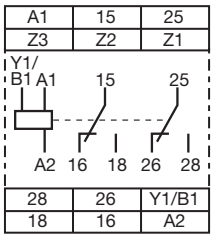
CT-MVS.12



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

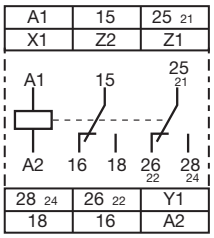
CT-MXS.22



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

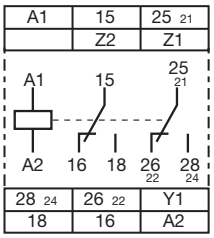
CT-MFS.21



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

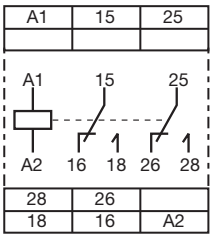
CT-MBS.22



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

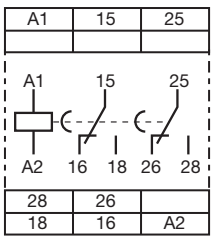
CT-WBS.22



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

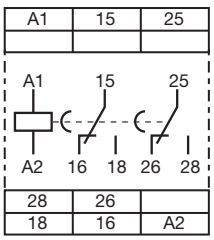
⊠ CT-ERS.21



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

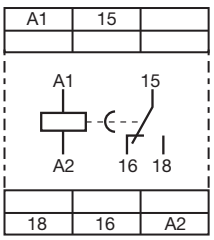
⊠ CT-ERS.22



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

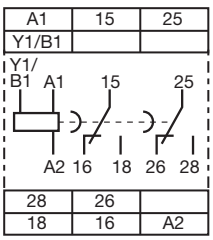


2CDC 252 010 F0b06

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

Electronic timers
CT-S range
Connection diagrams

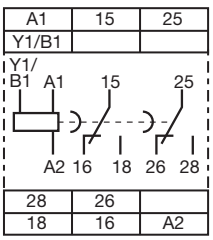
CT-APS.21



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

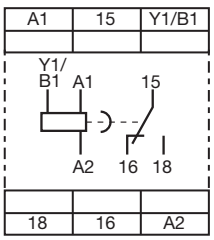
CT-APS.22



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

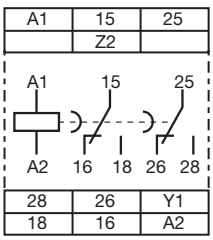
CT-APS.12



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

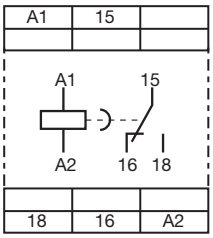
CT-AHS.22



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

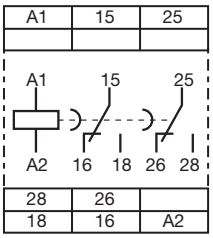
CT-ARS.11



2CDC 252 014 F0b06

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

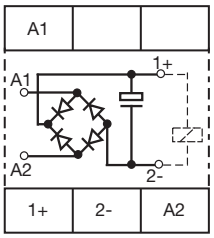
CT-ARS.21



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

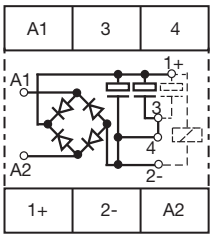
CT-VBS.17



2CDC 252 107 F0b05

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

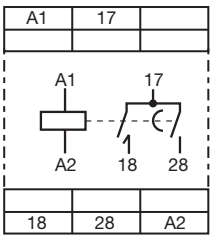
CT-VBS.18



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)

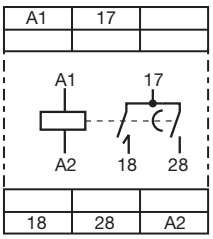
⚠ CT-SDS.22



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

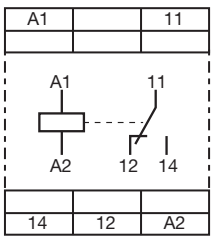


2CDC 252 016 F0b06

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

Electronic timers
CT-S range
Connection diagrams

CT-IRS.16

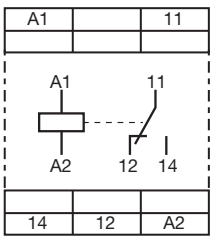


2CDC 252 123 F0b05

A1-A2 Supply: 24 AC/DC

11-12/14 1. c/o contact

CT-IRS.14

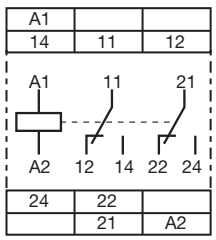


2CDC 252 123 F0b05

A1-A2 Supply: 110-240 V AC

11-12/14 1. c/o contact

CT-IRS.26

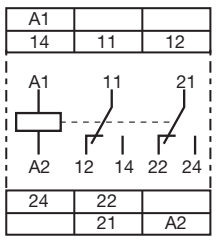


2CDC 252 124 F0b05

A1-A2 Supply: 24 AC/DC

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

CT-IRS.24

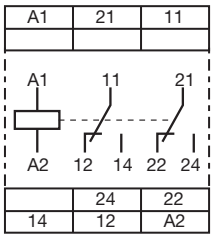


2CDC 252 124 F0b05

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.)

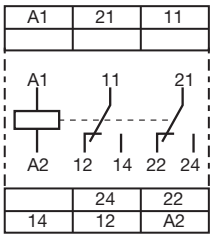


2CDC 252 125 F0b05

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.)

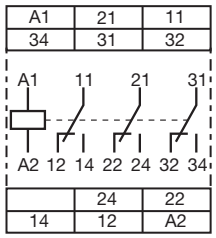


2CDC 252 125 F0b05

A1-A2 Supply: 110-240 V AC

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

CT-IRS.36

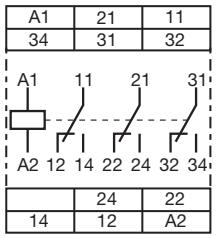


2CDC 252 035 F0b08

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



2CDC 252 035 F0b08

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

Electronic timers
CT-S range
Technical data

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

Type			**CT-S**		
Input circuit - Supply circuit			**A1-A2**		
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	200-240 V 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		24 V DC	9-28 mA (depending on device, see data sheet)		
		230 V AC	11-60 mA (depending on device, see data sheet)		
		400 V AC	3-5 mA (depending on device, see data sheet)		
Power failure buffering time		24 V DC	min. 15 ms		
		230/400 V AC	min. 20 ms		
Input circuit - Control circuit					
Kind of triggering		CT-MVS, CT-MXS, CT-APS	voltage-related triggering		
Control input, Control function	A1-Y1/B1	CT-MVS, CT-MXS, CT-APS	start timing external		
Parallel load / polarized			yes / no		
Maximum cable length to the control input			50 m - 100 pF /m		
Minimum control pulse length			20 ms		
Control voltage potential			see rated control supply voltage		
Current consumption of the control input		24 V DC	1.2 mA		
		230 V AC	8 mA		
		400 V AC	6 mA		
Kind of triggering		CT-MFS, CT-MBS, CT-AHS	volt-free triggering		
Control input, Control function	Y1-Z2	CT-MFS, CT-MBS, CT-AHS	start timing external		
	X1-Z2	CT-MFS	pause timing / accumulative functions		
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	CT-MFS, CT-MBS, CT-MVS.21, CT-MXS	50 kΩ		
	Z3-Z2	CT-MXS	50 kΩ		
Maximum cable length to remote potentiometer			2 x 25 m, shielded with 100pF/m		
Shield connection			Z2		
Timing circuit					
Time ranges		10 time ranges 0.05 s - 300 h	1.) 0.05-1 s 4.) 1.5-30 s 7.) 1.5-30 min	2.) 0.15-3 s 5.) 5-100 s 8.) 15-300 min 10.) 15-300 h	3.) 0.5-10 s 6.) 15-300 s 9.) 1.5-30 h
		7 time ranges 0.05 s - 10 min (CT-SDS, CT-ARS)	1.) 0.05-1 s 4.) 1.5-30 s	2.) 0.15-3 s 5.) 5-100 s 7.) 0.5-10 min	3.) 0.5-10 s 6.) 15-300 s
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		
Repeat accuracy (constant parameters)			Δt < ±0.2 %		
Accuracy within the rated control supply voltage tolerance			Δt < 0.004 % / V		
Accuracy within the temperature range			Δt < 0.03 % / °C		
Star-delta transition time	CT-SDS, CT-MBS, CT-MFS, CT-MVS.2x		fixed 50 ms		
Star-delta transition time tolerance	CT-SDS, CT-MBS, CT-MFS, CT-MVS.2x		±2 ms		
Minimum energizing time		CT-ARS	100 ms		
Formatting time [1]		CT-ARS	5 min		
Indication of operational states					

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

Electronic timers
CT-S range
Technical data

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

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	R1: yellow LED R2: yellow LED R: yellow LED	⎍⎍: output relay 1 energized ⎍⎍: output relay 2 energized ⎍⎍: output relay energized
Output circuit		
Kind of output	15-16/18	relay, 1 c/o contact
	15-16/18; 25-26/28	relay, 2 c/o contacts
	15-16/18; 25(21)-26(22)/28(24)	relay, 2 c/o contacts, 2nd c/o contact selectable as inst. contact
	17-18; 17-28	relay, 2 n/o contacts (CT-SDS)
Contact material		Cd-free, on request
Rated operational voltage U_e	IEC/EN 60947-1	250 V
Minimum switching voltage / minimum switching current		12 V / 10 mA (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
	DC12 (resistive) at 24 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)	B300
	max. rated operational voltage	300 V AC
	max. continuous thermal current at B 300	5 A
	max. making /breaking apparent power at B 300	3600/360 VA
Mechanical lifetime		30 x 10^6 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		
Duty time		100%
Dimensions (W x H x D)		22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 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	enclosure / terminals	IP50 / IP20
Electrical connection		
Wire size	fine-strand with(out) wire end ferrule	2 x 0.75-2.5 mm² (2 x 18-14 AWG)
	rigid	2 x 0.5-4 mm² (2 x 20-12 AWG)
Stripping length		7 mm (0.28 in)
Tightening torque		0.6-0.8 Nm
Environmental data		
Ambient temperature range	operation / storage	-25...+60 °C / -40...+85 °C
Extended operating temperature range for CT-MVS.21, CT-MFS.21, CT-ERS.21, CT-APS.21	operation / storage	-40...+60 °C / -40...+85 °C
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 impulse withstand voltage U_{imp} between all isolated circuits (VDE 0110, IEC/EN 60664)		4 kV; 1.2/50 µs
Pollution category (IEC/EN 60664-1, VDE 0110, UL 508)		3
Overvoltage category (IEC/EN 60664-1, VDE 0110, UL 508)		III
Rated insulation voltage U_i	input circuit / output circuit	500 V
	output circuit 1 / output circuit 2	300 V

2CDC110004C0207

Electronic timers
CT-S range
Technical data, Technical diagrams

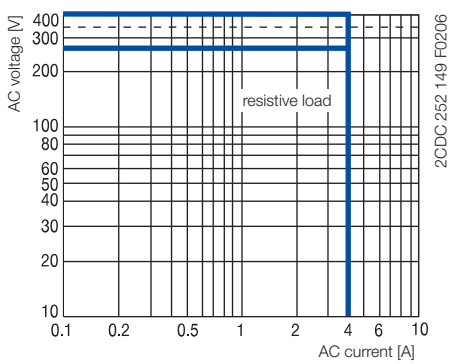
Data at T_a = 25 °C and rated values, unless otherwise indicated

Isolation data		
Basic insulation (IEC/EN 61140)	input circuit / output circuit	500 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) between all isolated circuits	type test	2.5 kV, 50 Hz, 1 min
	routine test	2.0 kV, 50Hz, 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 61000-6-2, IEC/EN 61000-6-1
electrostatic discharge	IEC/EN 61000-4-2	Level 3 6 kV / 8 kV
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3 10 V/m (10 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 emission		IEC/EN 61000-6-3, IEC/EN 61000-6-4
high-frequency radiated	IEC/CISPR 22, EN 55022	Class B
high-frequency conducted	IEC/CISPR 22, EN 55022	Class B

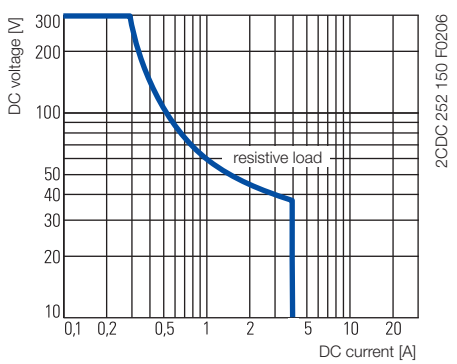
Technical diagrams

Load limit curves

AC load (resistive)

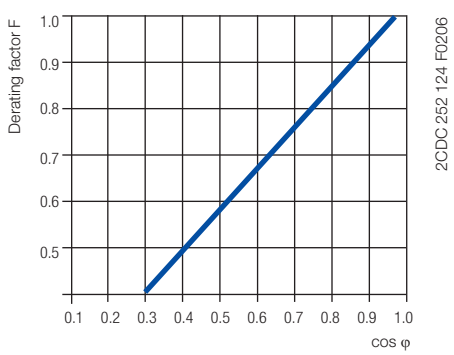


DC load (resistive)

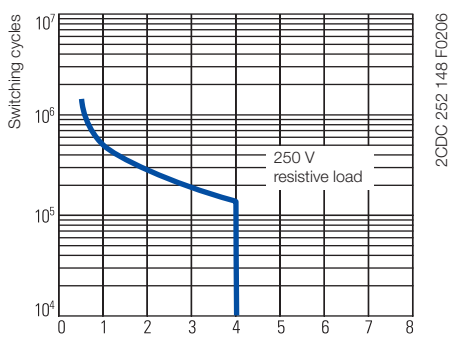


Derating factor F

for inductive AC load



Contact lifetime

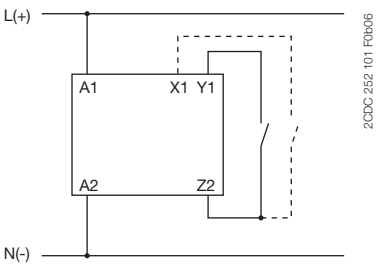


• **Approvals and marks** 1/4

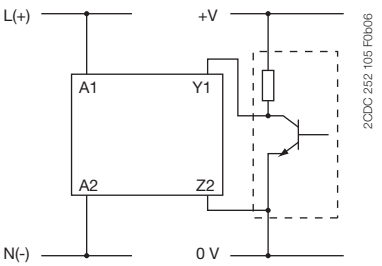
Electronic timers
CT-S range
Wiring notes, Dimensional drawing

Wiring notes

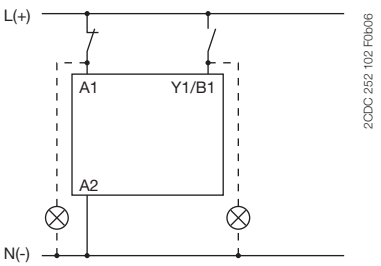
Control inputs (volt-free triggering)

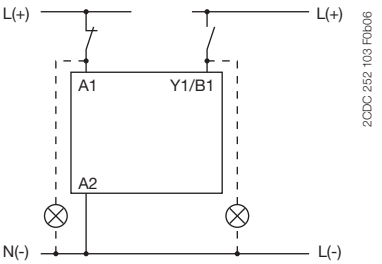


Triggering of the control inputs (volt-free) with a proximity switch (3 wire)



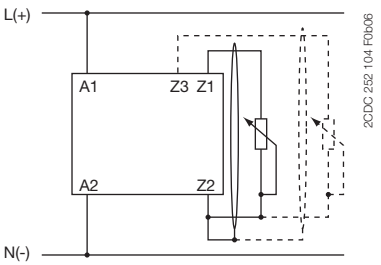
Control inputs (voltage-related triggering)





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