# Electronic timers
# CT range



## Content

# Electronic timers
# CT ranges
## 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

- 1 multifunction- and 5 single-function timers
- Devices with voltage-related (wet / non-floating), non-polarized control contact, capable of switching parallel load
- Width of only 17,5 mm, this corresponds to one rail division in the distribution panel.
- Light-gray enclosure in RAL 7035, same colour as MDRC range
- Weight of approx. 60 g only

### Electronic timers CT-E range the economy range

Perfect price-performance ratio for OEM users

- 2 multifunction-, 11 single-function timers and 2 switching relays
- CT-MKE, CT-AKE and CT-EKE with solid-state output for contactless switching
- Wide connecting screws in M3 (Pozidrive 1) for easy and fast connection

### Electronic timers CT-S range the high end timers

Universal and economic

- 4 multifunction- , 22 single-function timers and 4 switching relays
- Devices with 1 or 2 c/o contacts
- Sealable transparent cover for protection against unautorized changes of time and threshold values
- Integrated marker label

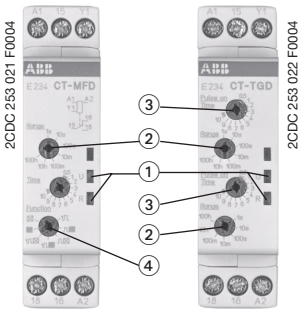
Depending on device:

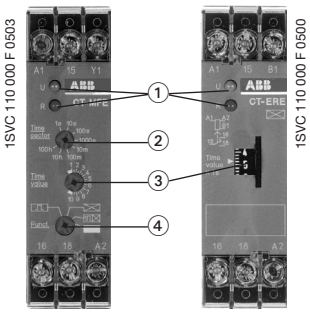
- 2nd c/o contact can be selected as instantaneous contact
- Remote potentiometer connection: When an external potentiometer is connected, the internal potentiometer is disabeld.
- Starting the time delay is possible via an external (volt-free (dry) / floating)) control contact or via the supply voltage
- Pause timing is possible via an external control contact

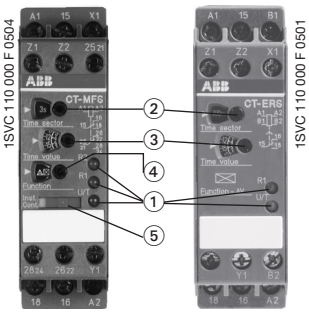
# Electronic timers
# CT ranges
## Overview



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




## Functions

| | | Multifunctional | Single-functional | Multifunctional | Single-functional | Multifunctional | Single-functional |
|---|---|---|---|---|---|---|---|
| ⊠ | ON-delay | CT-MFD | CT-ERD | CT-MFE, CT-MKE | CT-ERE, CT-EKE | CT-MFS, CT-MVS, CT-MBS | CT-ERS |
| ■ | OFF-delay | CT-MFD | CT-AHD | CT-MFE | CT-AHE, CT-ARE, CT-AKE | CT-MFS, CT-MVS, CT-MBS | CT-AHS, CT-APS, CT-ARS, CT-VBS |
| ⊠■ | ON-and OFF-delay | | | | | | CT-EAS |
| 1⎍⊠ | Impulse-ON | CT-MFD | CT-VWD | CT-MFE, CT-MKE | CT-VWE, | CT-MFS, CT-MVS, CT-MBS | CT-VWS |
| 1⎍■ | Impulse-OFF | CT-MFD | | | CT-AWE | CT-MFS, CT-MVS, CT-MBS | CT-AWS |
| ⎍⊠ | Flasher starting with ON | CT-MFD | CT-EBD | CT-MFE, CT-MKE | | CT-MFS, CT-MVS, CT-MBS | |
| ⎍■ | Flasher starting with OFF | CT-MFD | | CT-MFE, CT-MKE | CT-EBE | CT-MFS, CT-MVS, CT-MBS | CT-EBS |
| ⎍⊠ | Pulse generator | | CT-TGD | | | | CT-TGS, CT-PGS |
| 1⎍ | Pulse former | CT-MFD | | CT-MFE | | | |
| △⊠ | Star-delta change-over twice ON-delayed | | | | CT-YDE, CT-SDE | CT-MFS, CT-MVS, CT-MBS | CT-YDAV |
| △1⎍ | Star-delta change-over with impulse | | | | | CT-MFS, CT-MVS, CT-MBS | CT-YDEW |
| ▭ | Switching relay | | | | CT-IRE | | CT-IRS |

## Technical data (extract)

| | | | | |
|---|---|---|---|---|
| Time ranges | 7: 0.05 s - 100 h | 8: 0.05 s - 100 h | 4 (single): 0.1-10 s, 0.3-30 s, 3-300 s, 0.3-300 min | 10: 0.05 s - 300 h (CT-ARS - 7 : 0.05 s- 10 min) |
| Supply voltage | Continous ranges | Continous ranges | Single and dual ranges | Continous and multiranges |
| Type and number of contacts | 1 c/o | 1 c/o or 1 thyristor (CT-SDE - 1 n/o und 1 n/c) | | 1 or 2 c/o, 2nd c/o as instantaneous contact selectable |
| Control contacts | voltage-related (wet / non-floating), non-polarized, capable of switching parallel load | voltage -related (wet / non-floating), polarized (CT-MFE, CT-AHE and CT-AWE with auxiliary voltage) | | volt-free (dry / floating), (CT-MVS, CT-APS: voltage-related / wet / non-floating) |

# Electronic timers
# CT ranges
## Approvals and marks

■ existing
□ pending

### CT-D range

| Approvals | CT-MFD | CT-ERD | CT-AHD | CT-VWD | CT-EBD | CT-TGD | | |
|---|---|---|---|---|---|---|---|---|
| cULus LISTED | ■ | ■ | ■ | ■ | ■ | ■ | | |
| GL | | | | | | | | |
| GOST | ■ | ■ | ■ | ■ | ■ | ■ | | |
| CB scheme | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | ■ | ■ | ■ | ■ | ■ | ■ | | |
| **Marks** | | | | | | | | |
| CE | ■ | ■ | ■ | ■ | ■ | ■ | | |
| C-Tick | ■ | ■ | ■ | ■ | ■ | ■ | | |

### CT-E range

| Approvals | CT-MFE | CT-ERE | CT-AHE | CT-ARE | CT-VWE | CT-AWE without aux. voltage | CT-AWE with aux. voltage | CT-EBE | CT-YDE | CT-SDE | CT-IRE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cULus LISTED | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| GL | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| GOST | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| CB scheme | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| **Marks** | | | | | | | | | | | |
| CE | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| C-Tick | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

■ existing
□ pending

### CT-S range

| Approvals | CT-MKE | CT-EKE | CT-AKE | | | CT-MFS | CT-MVS | CT-MBS 2 c/o | CT-MBS 1 c/o | CT-ERS 1 c/o | CT-ERS 1 c/o + control con. | CT-ERS 2 c/o | CT-AHS 1 c/o | CT-AHS 2 c/o | CT-APS | CT-ARS 1 c/o | CT-ARS 2 c/o | CT-VBS | CT-EAS 1 c/o |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| cULus LISTED | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| GL | ■ | ■ | ■ | | | ■ | □ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ |
| GOST | ■ | ■ | ■ | | | ■ | □ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ |
| CB scheme | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| **Approvals** | | | | | | | | | | | | | | | | | | | |
| CE | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| C-Tick | ■ | ■ | ■ | | | ■ | □ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ |

■ existing
□ pending

| Approvals | CT-EAS 2 c/o | CT-EVS | CT-VWS 1 c/o | CT-VWS 2 c/o | CT-AWS 1 c/o | CT-AWS 2 c/o | CT-EBS 1 c/o | CT-EBS 2 c/o | CT-TGS | CT-PGS | CT-YDAV | CT-YDEW | CT-IRS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| cULus LISTED | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| GL | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | |
| GOST | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| CB scheme | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| **Marks** | | | | | | | | | | | | | | | | | | | |
| CE | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| C-Tick | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |

# Electronic timers
# CT-D range



## Content

# Electronic timers
# CT-D range
## Benefits and advantages

### CT-D range - the modular timers

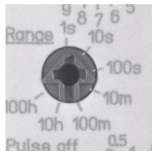
Ideally suited for installation in distribution panels


- 1 multifunction and 5 single-function timers
- Supply voltage - Wide range: 24-240 V AC / 24-48 V DC
- 1 c/o contact (250 V / 4 A)
- Devices with voltage-related (wet / non-floating), non-polarized control contact, capable of switching parallel load
- Width of only 17.5 mm
- Enclosure colour RAL 7035
- Weight of approx. 60 g only
- Approvals / Marks

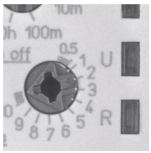
cULus, CSA, CB scheme, EAC / CE, RCM

### Direct reading scales

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



2CDC 253 034 F0004



2CDC 253 035 F0004

### LEDs for status indication

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

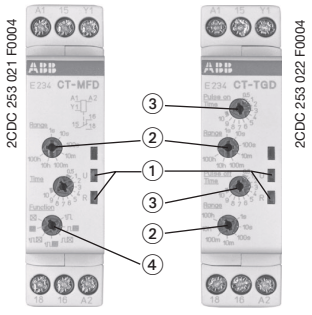
### Connecting terminals

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

### Operating controls

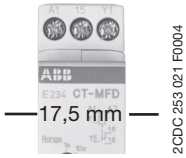
① LEDs for status indication
R: red LED -
output relay energized
U: green LED -
supply voltage
(flashing while timing)
② Time range adjustment
③ Fine adjustment of the desired time delay
④ Preselection of the desired timing function




multifunctional single-functional

### 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.



2CDC 253 021 F0004

# Electronic timers
# CT-D range
## Ordering details


**CT-MFD**


**CT-ERD**


**CT-AHD**


**CT-EBD**


**CT-TGD**

| Supply voltage | Control contact | Order code | Price 1 piece |
|---|---|---|---|
| **Multifunction timer** | | | |
| **CT-MFD:** 7 functions[1], 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs | | | |
| 24-240 V AC, 24-48 V DC | ■ | **1SVR 500 020 R0000** | |
| **ON-delay timer** ✉ | | | |
| **CT-ERD:** 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs | | | |
| 24-240 V AC, 24-48 V DC | | **1SVR 500 100 R0000** | |
| **OFF-delay timer with auxiliary voltage** ▬ | | | |
| **CT-AHD:** 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs | | | |
| 24-240 V AC, 24-48 V DC | ■ | **1SVR 500 110 R0000** | |
| **Impulse-ON timer** 1⎍✉ | | | |
| **CT-VWD:** 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs | | | |
| 24-240 V AC, 24-48 V DC | | **1SVR 500 130 R0000** | |
| **Flasher starting with ON** ⎍✉ | | | |
| **CT-EBD:** 7 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs | | | |
| 24-240 V AC, 24-48 V DC | | **1SVR 500 150 R0000** | |
| **Pulse generator starting with ON or OFF** ⎍▬ | | | |
| **CT-TGD:** 2x7 time ranges (0.05 s - 100 h) [2], 1 c/o contact, 2 LEDs | | | |
| 24-240 V AC, 24-48 V DC | ■ | **1SVR 500 160 R0000** | |

1) Timing 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 with auxiliary voltage

2) ON and OFF times adjustable independently: 2x7 time ranges 0.05 s - 100 h

Packing unit: 1 piece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- **Technical data** ..... 14
- **Connection diagrams** ..... 16
- **Wiring notes, Dimensional drawings** ..... 16

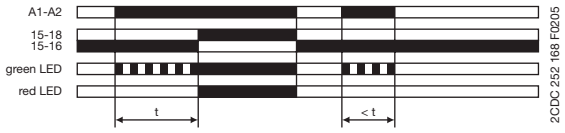
# Electronic timers
# CT-D range
## Function diagrams

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

Timing begins when supply voltage is applied to **A1-A2**. 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 supply voltage is interrupted, the output relay de-energizes and the time delay is reset.

Interrupting supply voltage before the time delay is complete, resets the time delay. The output relay does not energize.




t = adjusted delay time

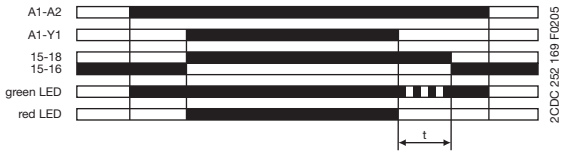
The control contact **A1-Y1** of the CT-MFD is without function if ON-delay is configured.

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

This function requires continuous supply voltage at terminals **A1-A2** for timing.

Timing is controlled by a control contact, connected to terminals **A1-Y1**. If the control contact is closed, the output relay energizes. If control contact **A1-Y1** is opened, the selected time delay starts. The green LED flashes during timing. When the time delay is complete, the output relay de-energizes and the flashing green LED turns steady.

If control contact **A1-Y1** closes before the time delay is complete, the time delay is reset. Timing starts again when the control contact re-opens.

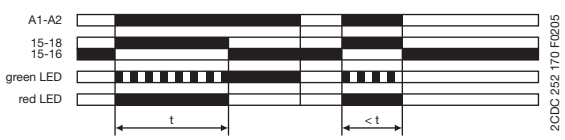



t = adjusted delay time

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

The output relay energizes immediately when supply voltage is applied to terminals A1-A2 and de-energizes after the selected time delay is complete. The green LED flashes during timing. When the time delay is complete, the flashing green LED turns steady.

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



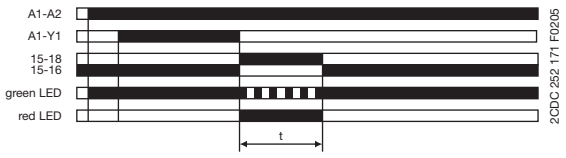

t = adjusted pulse time

The control contact **A1-Y1** of the CT-MFD is without function if Impulse-ON is configured.

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

This function requires continuous supply voltage at terminals **A1-A2**. Opening control contact **A1-Y1**, energizes the output relay immediately and timing begins. The green LED flashes during timing. When the selected time delay is complete, the flashing green LED turns steady and the output relay de-energizes.

Interrupting supply voltage or closing control contact **A1-Y1**, before the time delay is complete, de-energizes the output relay and resets the time delay.



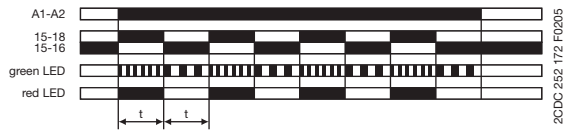

t = adjusted pulse time

# Electronic timers
# CT-D range
## Function diagrams

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

Applying supply voltage to terminals **A1-A2**, 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 cycle.

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



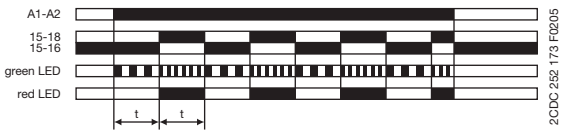

t = adjusted flashing time

The control contact **A1-Y1** of the CT-MFD is without function if Flasher starting with ON is configured.

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

Applying supply voltage to terminals **A1-A2**, 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 cycle.

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



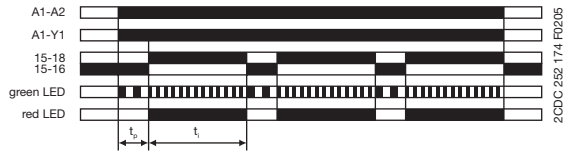

t = adjusted pulse time

The control contact **A1-Y1** of the CT-MFD is without function if Flasher starting with OFF is configured.

### Pulse generator starting with ON or OFF (Recycling unequal times) CT-TGD

Applying supply voltage to terminals **A1-A2**, starts timing. Timing starts with the OFF time first. If a jumper wire is connected to input **X2-Z2** (see below), the timer starts with the ON time first. The ON & OFF times are displayed by the flashing green LED.

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



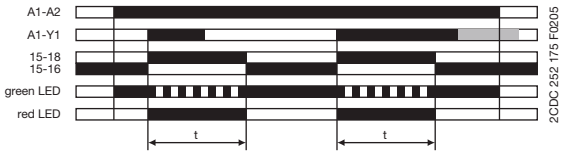

$t_p$ = OFF-time
$t_i$ = pulse time
A1-Y1 ■ (closed) = starting with OFF
A1-Y1 □ (open) = starting with ON

### Pulse former (Single shot) CT-MFD

Closing the control contact connected to terminals **A1-Y1**, with 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 contact switch **A1-Y1** during the time delay has no effect. The green LED flashes during timing. When the selected pulse time is complete, the flashing green LED turns steady and the output relay de-energizes.

After the time delay is complete, it can be restarted by closing control contact **A1-Y1**.

If supply voltage is interrupted during timing, the output relay de-energizes and the ON time is reset.




t = adjusted impulse time

# Electronic timers
# CT-D range
## Technical data

| | | | CT-D range |
|---|---|---|---|
| **Input circuits** | | | |
| Supply voltage - power consumption | | **A1-A2** | 24-240 V AC / 24-48 V DC - approx. 0.6-1.3 VA/W |
| Supply voltage tolerance | | | -15..+10 % |
| Supply voltage frequency | | DC supply | 0 Hz |
| | | AC supply | 50/60 Hz |
| Control contact connection, voltage-related[1] | | **A1-Y1**[2] | start timing external (CT-MFD, CT-AHD, CT-TGD) |
| Minimum control input pulse length | | | 20 ms |
| Maximum cable length to the control inputs | | | |
| Duty time | | | 100 % |
| **Timing circuit** | | | |
| Time ranges | | | 7 time ranges 0.05 s - 100 h |
| | | | 1.) 0.05-1 s 2.) 0.5-10 s 3.) 5-100 s 4.) 0.5-10 min<br>5.) 5-100 min 6.) 0.5-10 h 7.) 5-100 h |
| Recovery time | | | <50 ms |
| Repeat accuracy (constant parameters) | | | < ± 0.5 % |
| Timing error within the supply voltage tolerance | | | <0.5 % / % Δ U |
| Timing error within the temperature range | | | <0.06 % / °C |
| **Indication of operational states** | | | |
| Supply voltage / timer | | | green LED steady / flashing while timing |
| Output relay energized | | | red LED |
| **Output circuits** | | **15-16/18** | |
| Number of contacts | | | relay, 1 c/o contact |
| Contact material | | | $AgSnO_2$ |
| Rated voltage | acc. to VDE 0110, IEC 60947-1 | | 250 V |
| Minimum switching voltage | | | 12 V |
| Maximum switching voltage | | | 250 V AC |
| Minimum switching current | | | 100 mA |
| Maximum switching current | | | 6 A |
| Rated switching current acc. to IEC 60947-5-1 | AC-12 (resistive) | 230 V | 6 A |
| | AC-15 (inductive) | 230 V | 3 A |
| | DC-12 (resistive) | 24 V | 6 A |
| | DC-13 (inductive) | 24 V | 2 A |
| Maximum lifetime | | mechanical | 30 x $10^6$ switching cycles |
| | electrical (AC-12, 230 V, 4 A) | | 0.1 x $10^6$ switching cycles |
| Short circuit proof, max. fuse rating | | n/c | 6 A fast, operating class gL |
| | | n/o | 10 A fast, operating class gL |
| **General data** | | | |
| Width of the enclosure | | | 17.5 mm |
| Wire size | | with wire end ferrule | 2 x 1,5 $mm^2$ (2 x 16 AWG) |
| | | without wire end ferrule | 2 x 2.5 $mm^2$ (2 x 14 AWG) |
| | | rigid | |
| Weight | | | approx. 60 g (2.1 oz) |
| Mounting position | | | any |
| Degree of protection enclosure / terminals | | | IP50 / IP 20 |
| Operating temperature | | | -20...+60 °C |
| Storage temperature | | | -40...+85 °C |
| Mounting | | | DIN rail (EN 50022), snap-on mounting |

[2] electrically isolated, non-polarized

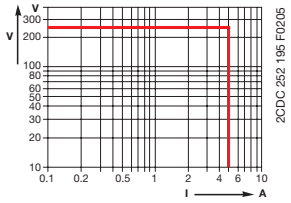
• [1] **Connection diagrams** ..... 16 • [1] **Wiring notes** ..... 16

# Electronic timers
# CT-D range
## Technical data, Load limit curves

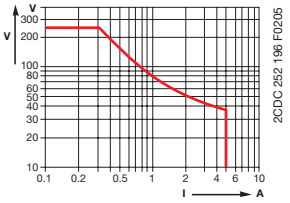
| | | CT-D range |
|---|---|---|
| **Standards** | | |
| Product standard | | IEC 61812-1 10.1996, EN 611812-1 + A11/8.1999, DIN VDE 0435 part 2021 |
| EMC Directive | | 89/336/EEC |
| Electromagnetic compatibility | acc.to EN 61000-6-2, EN 61000-6-4 | |
| ESD | acc. to IEC 61000-4-2, EN 61000-4-2 | level 3 6 kV / 8 kV |
| HF radiation resistance | acc. to IEC 61000-4-3, EN 61000-4-3 | level 3 10 V/m |
| Burst | acc. to IEC 61000-4-4, EN 61000-4-4 | level 3 2 kV / 5 kHz |
| Surge | acc. to IEC 1000-4-5, EN 61000-4-5 | level 4 2 kV L-L |
| HF line emission | acc. to IEC 1000-4-6, EN 61000-4-6 | level 3 10 V |
| Low Voltage Directive | | 73/23/EEC |
| Operational reliability | acc. to IEC 68-2-6 | 4 g |
| Mechanical resistance | acc. to IEC 68-2-6 | 6 g |
| **Approvals / marks** | | **see table of approvals and marks** |
| **Isolation data** | | |
| Rated insulation voltage between supply circuit, control circuit and output circuit | acc. to IEC 50175 / VDE 0160 | 300 V |
| Rated impulse withstand voltage between all isolated circuits | acc. to VDE 0110, IEC 664 | 4 kV / 1.2-50 µs |
| Test voltage between all isolated circuits | | 2.5 kV, 50 Hz, 1 min. |
| Pollution category | acc. to IEC 50175 / VDE 0160 / UL508 | 2 |
| Overvoltage category | acc. to IEC 50175 / VDE 0160 / UL508 | III |
| Environmental testing | acc. to IEC 68-2-30 | 24 h cycle time, 55 °C, 93 % rel., 96 h |

## Load limit curves

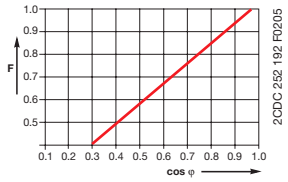
AC load (resistive)



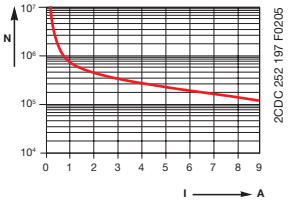

DC load (resistive)




Derating factor F for inductive AC load




Contact lifetime /switching cycles N

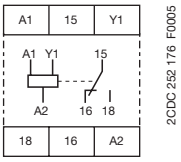



220 V 50 Hz 1 AC
360 cycles/h

# Electronic timers
# CT-D range
## Connection diagrams, Wiring notes, Dimensional drawing

## Connection diagrams, positions of connecting terminals

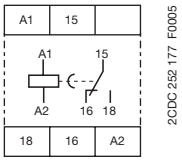
### CT-MFD




Device:
1SVR 500 020 R0000

A1-A2 Supply: 24-240 V AC or 24-48 V DC
A1-Y1 Control contact to start timing
15-16/18 c/o contact

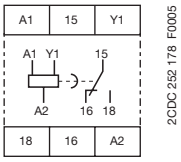
### CT-ERD




Device:
1SVR 500 100 R0000

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

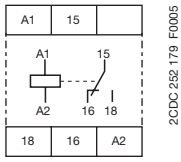
### CT-AHD




Device:
1SVR 500 110 R0000

A1-A2 Supply: 24-240 V AC or 24-48 V DC
A1-Y1 Control contact to start timing
15-16/18 c/o contact

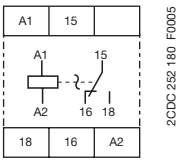
### CT-VWD




Device:
1SVR 500 130 R0000

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

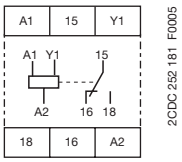
### CT-EBD




Device:
1SVR 500 150 R0000

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

### CT-TGD

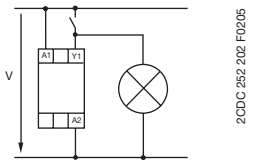


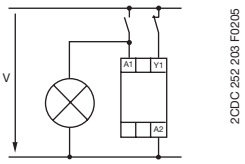

Device:
1SVR 500 160 R0000

A1-A2 Supply: 24-240 V AC or 24-48 V DC
A1-Y1 Control contact closed = starting with OFF
A1-Y1 Control contact open = starting with ON
15-16/18 c/o contact

## Wiring notes for devices with control contact

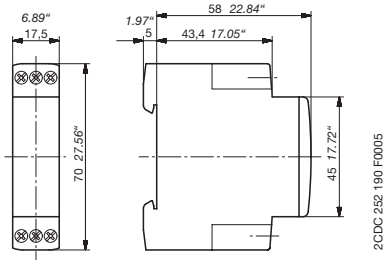
Parallel load to control contact/input possible/allowed




## Dimensional drawing

Dimensions in mm



# Electronic timers
# CT-E range



## Content

# Electronic timers
# CT-E range
## Benefits and advantages

### CT-E range - the economy range

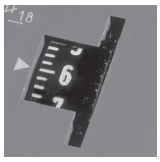
Perfect price-performance ratio for OEM users

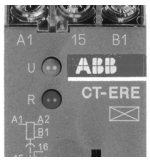

- 2 multifunction, 11 single-function timers and 2 switching relays
- Supply voltage - Single or dual ranges:
  24 V AC/DC, 110-130 V AC, 220-240 V AC -
  CT-MFE: 24-240 V AC/DC
- Output contacts: 1 c/o contact (250 V / 4 A) or
  solid-state output for high switching frequencies
  (thyristor 0.8 A)
- Single time ranges 0.1-10 s, 0.3-30 s, 3-300 s, 0.3-30 min -
  CT-MFE: 8 time ranges (0,05 s - 100 h)
- 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)

cULus LISTED, GL, PCT, CB scheme, EAC / CE, RCM

#### Direct reading scales

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




#### LEDs for status indication

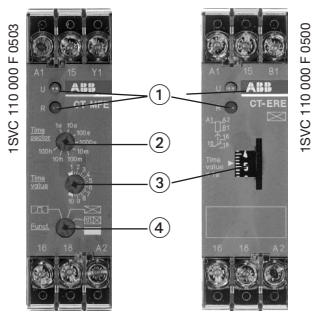
All actual operational states are displayed by front-face LEDs, thus simplifying commissioning and troubleshooting.

#### 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
R2: red LED -
output relay energized
U: green LED -
supply voltage
② Time range adjustment
③ Fine adjustment of the desired time delay
④ Preselection of the desired timing function



# Electronic timers
# CT-E range
## Ordering details




**CT-MFE**


**CT-ERE**


**CT-AHE**


**CT-ARE**


**CT-VWE**

| Supply voltage | Time range | Control contact | Order code | Price 1 piece |
|---|---|---|---|---|
| **Multifunction relay** | | | | |
| **CT-MFE:** 6 functions[1], 8 time ranges (0.05 s - 100 h), 1 c/o contact, 2 LEDs | | | | |
| 24-240 V AC/DC | 0.05 s - 100 h | ■ | **1SVR 550 029 R8100** | |
| **ON-delay timers** ⊠ | | | | |
| **CT-ERE:** 1 time range, 1 c/o contact, 2 LEDs | | | | |
| 24 V AC/DC, 220-240 V AC | 0.1-10 s | | **1SVR 550 107 R1100** | |
| | 0.3-30 s | | **1SVR 550 107 R4100** | |
| | 3-300 s | | **1SVR 550 107 R2100** | |
| | 0.3-30 min | | **1SVR 550 107 R5100** | |
| 110-130 V AC | 0.1-10 s | | **1SVR 550 100 R1100** | |
| | 0.3-30 s | | **1SVR 550 100 R4100** | |
| | 3-300 s | | **1SVR 550 100 R2100** | |
| | 0.3-30 min | | **1SVR 550 100 R5100** | |
| **OFF-delay timers** ▬ | | | | |
| **CT-AHE:** 1 c/o contact, 2 LEDs | | | | |
| 24 V AC/DC | 0.1-10 s | ■ | **1SVR 550 118 R1100** | |
| | 0.3-30 s | ■ | **1SVR 550 118 R4100** | |
| | 3-300 s | ■ | **1SVR 550 118 R2100** | |
| 110-130 V AC | 0.1-10 s | ■ | **1SVR 550 110 R1100** | |
| | 0.3-30 s | ■ | **1SVR 550 110 R4100** | |
| | 3-300 s | ■ | **1SVR 550 110 R2100** | |
| 220-240 V AC | 0.1-10 s | ■ | **1SVR 550 111 R1100** | |
| | 0.3-30 s | ■ | **1SVR 550 111 R4100** | |
| | 3-300 s | ■ | **1SVR 550 111 R2100** | |
| **CT-ARE:** without auxiliary voltage, 1 c/o contact, 1 LED | | | | |
| 24 V AC/DC, 220-240 V AC | 0.1-10 s | | **1SVR 550 127 R1100** | |
| | 0.3-30 s | | **1SVR 550 127 R4100** | |
| 110-130 V AC | 0.1-10 s | | **1SVR 550 120 R1100** | |
| | 0.3-30 s | | **1SVR 550 120 R4100** | |
| **Impulse-ON timers** 1⎍⊠ | | | | |
| **CT-VWE:** 1 c/o contact, 2 LEDs | | | | |
| 24 V AC/DC, 220-240 V AC | 0.1-10 s | | **1SVR 550 137 R1100** | |
| | 0.3-30 s | | **1SVR 550 137 R4100** | |
| | 3-300 s | | **1SVR 550 137 R2100** | |
| 110-130 V AC | 0.1-10 s | | **1SVR 550 130 R1100** | |
| | 0.3-30 s | | **1SVR 550 130 R4100** | |
| | 3-300 s | | **1SVR 550 130 R2100** | |

1) Functions: ON-delay, OFF-delay, impulse-ON, impulse-OFF, flasher starting with ON, flasher starting with OFF, pulse former
Packing unit: 1 piece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# Electronic timers
# CT-E range
## Ordering details


**CT-AWE**


**CT-EBE**


**CT-YDE**


**CT-SDE**


**CT-IRE**

| Supply voltage | Time range | Control contact | Order code | Price 1 piece |
|---|---|---|---|---|

### Impulse-OFF timers 1⎍▬

**CT-AWE:** without auxiliary voltage, 1 c/o contact, 2 LEDs

| | | | | |
|---|---|---|---|---|
| 24 V AC/DC | 0.05-1 s | | **1SVR 550 158 R3100** | |
| 110-130 V AC | 0.05-1 s | | **1SVR 550 150 R3100** | |
| 220-240 V AC | 0.05-1 s | | **1SVR 550 151 R3100** | |

**CT-AWE:** with auxiliary voltage, 1 c/o contact, 2 LEDs

| | | | | |
|---|---|---|---|---|
| 24 V AC/DC | 0.1-10 s | ■ | **1SVR 550 148 R1100** | |
| | 0.3-30 s | ■ | **1SVR 550 148 R4100** | |
| | 3-300 s | ■ | **1SVR 550 148 R2100** | |
| 110-130 V AC | 0.1-10 s | ■ | **1SVR 550 140 R1100** | |
| | 0.3-30 s | ■ | **1SVR 550 140 R4100** | |
| | 3-300 s | ■ | **1SVR 550 140 R2100** | |
| 220-240 V AC | 0.1-10 s | ■ | **1SVR 550 141 R1100** | |
| | 0.3-30 s | ■ | **1SVR 550 141 R4100** | |
| | 3-300 s | ■ | **1SVR 550 141 R2100** | |

### Flashers starting with OFF ⎍▬

**CT-EBE:** with symmetrical ON-OFF times, starting with OFF, 1 c/o contact, 2 LEDs

| | | | | |
|---|---|---|---|---|
| 24 V AC/DC, 220-240 V AC | 0.1-10 s | | **1SVR 550 167 R1100** | |
| 110-130 V AC | 0.1-10 s | | **1SVR 550 160 R1100** | |

### Star-delta timers △⊠, △1⎍

**CT-YDE:** 1 c/o contact, 2 LEDs

| | | | | |
|---|---|---|---|---|
| 24 V AC/DC, 220-240 V AC | 0.1-10 s | | **1SVR 550 207 R1100** | |
| | 0.3-30 s | | **1SVR 550 207 R4100** | |
| | 3-300 s | | **1SVR 550 207 R2100** | |
| 110-130 V AC | 0.1-10 s | | **1SVR 550 200 R1100** | |
| | 0.3-30 s | | **1SVR 550 200 R4100** | |
| | 3-300 s | | **1SVR 550 200 R2100** | |

**CT-SDE:** ON-delayed, 1 n/c contact, 1 n/o contact, internally wired, 2 LEDs

| | | | | |
|---|---|---|---|---|
| 24 V AC/DC, 220-240 V AC | 0.3-30 s | | **1SVR 550 217 R4100** | |
| 110-130 V AC | 0.3-30 s | | **1SVR 550 210 R4100** | |
| 380-415 V AC | 0.3-30 s | | **1SVR 550 212 R4100** | |

### Switching relays ▭

**CT-IRE:** impulse-OFF, A1/A2 diagonally, 1 c/o contact, 2 LEDs

| | | | | |
|---|---|---|---|---|
| 24 V AC/DC | | | **1SVR 550 228 R9100** | |
| 220-240 V AC/DC | | | **1SVR 550 221 R9100** | |

**CT-IRE:** impulse-OFF, A1/A2 on top, 1 c/o contact, 2 LEDs

| | | | | |
|---|---|---|---|---|
| 24 V AC/DC | | | **1SVR 550 238 R9100** | |
| 220-240 V AC/DC | | | **1SVR 550 231 R9100** | |

Packing unit: 1 piece


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# Electronic timers
# CT-E range with solid-state output
## Ordering details




**CT-MKE**


**CT-EKE**


**CT-AKE**

| Supply voltage | Time range | **Order code** | **Price** 1 piece |
|---|---|---|---|

### Solid-state output / contactless
### Multifunction timer

**CT-MKE:** 4 functions[1], solid-state output, functions and time range selection via external jumpers, 1 LED

| | | | |
|---|---|---|---|
| 24-240 V AC/DC | 0.1-10 s, 3-300 s | **1SVR 550 019 R0000** | |

### ON-delay timers ⊠

**CT-EKE:** solid-state output, 1 LED

| | | | |
|---|---|---|---|
| 24-240 V AC/DC | 0.1-10 s | **1SVR 550 509 R1000** | |
| | 0.3-30 s | **1SVR 550 509 R4000** | |
| | 3-300 s | **1SVR 550 509 R2000** | |

### Off-delay timers ■

**CT-AKE:** solid-state output, 1 LED

| | | | |
|---|---|---|---|
| 24-240 V AC | 0.1-10 s | **1SVR 550 519 R1000** | |
| | 0.3-30 s | **1SVR 550 519 R4000** | |
| | 3-300 s | **1SVR 550 519 R2000** | |

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-delayed (AC/DC), impulse-ON (AC only), flasher starting with ON (AC only), flasher starting with OFF (AC only)
Packing unit: 1 piece


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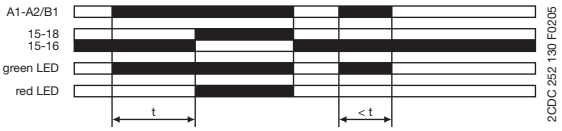
# Electronic timers
# CT-E range with relay output
## Function diagrams

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

Timing begins when supply voltage is applied to **A1-A2/B1**. When the selected time delay is complete, the output relay energizes.

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

Interrupting supply voltage before the time delay is complete, resets the time delay. The output relay does not energize.




t = adjusted delay time

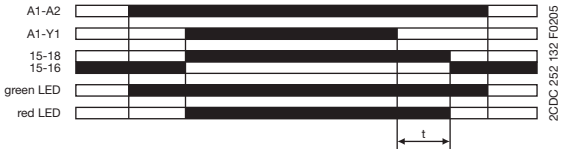
The control contact **A1-Y1** of the CT-MFE is without function if ON-delay is configured.

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

This function requires continuous supply voltage at terminals **A1-A2** for timing.

Timing is controlled by a voltage-related (wet/non-floating) control contact, connected to terminals **A1-Y1**. If the control contact is closed, the output relay energizes. If control contact **A1-Y1** is opened, the selected time delay starts. When the time delay is complete, the output relay de-energizes.

If control contact **A1-Y1** closes before the time delay is complete, the time delay is reset. Timing starts again when the control contact re-opens.




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

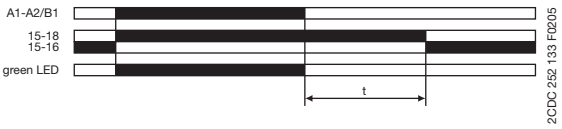
### OFF-delay, without auxiliary voltage (true delay on break) CT-ARE

The OFF-delay function without auxiliary voltage does not require supply voltage at terminals **A1-A2/B1** for timing.

Applying supply voltage to terminals **A1-A2/B1**, energizes the output relay. If supply voltage is interrupted, the OFF-delay starts. When timing is complete, the output relay de-energizes.

If supply voltage is re-applied to **A1-A2/B1**, before the time delay is complete, the time delay is reset and the output relay remains energized.

Supply voltage must be applied for the minimum energizing time (200 ms), for proper operation.

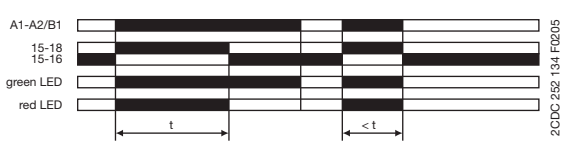



t = adjusted delay time

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

The output relay energizes immediately when supply voltage is applied to terminals **A1-A2/B1** and de-energizes after the selected time delay time is complete.

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




t = adjusted pulse time

The control contact **A1-Y1** of the CT-MFE has to be jumpered if Impulse-ON is configured.

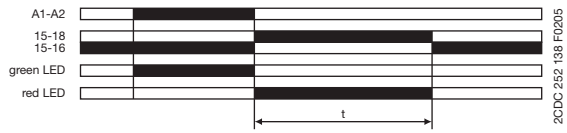
# Electronic timers
# CT-E range with relay output
## Function diagrams

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

The Impulse-OFF function without auxiliary voltage does not require supply voltage at terminals **A1-A2** for timing.

If supply voltage is interrupted, the output relay energizes and the OFF time starts. When timing is complete, the output relay de-energizes.

If supply voltage is re-applied to **A1-A2**, before the time delay is complete, the time delay is reset and the output relay de-energizes. Supply voltage must be applied for the minimum energizing time (200 ms), for proper operation.

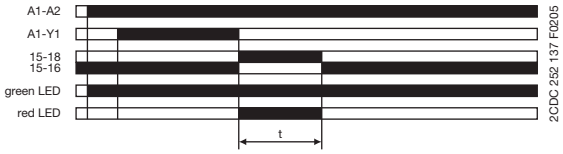



t = adjusted pulse time

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

This function requires continuous supply voltage at terminals **A1-A2**. Opening control contact **A1-Y1**, energizes the output relay immediately and timing begins. When the selected time delay is complete, the output relay de-energizes.

Interrupting supply voltage or closing control contact **A1-Y1**, before the time delay is complete, de-energizes the output relay and resets the time delay.

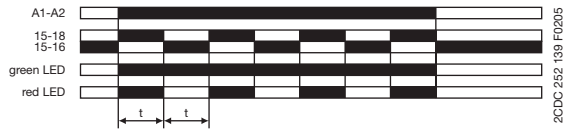



t = adjusted pulse time

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

Applying supply voltage to terminals **A1-A2**, starts timing with symmetrical ON & OFF times. The cycle starts with an ON time first.

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



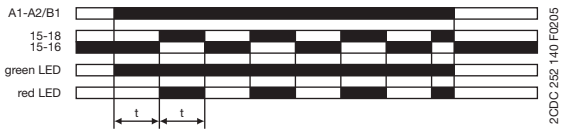

t = adjusted flashing time

The control contact **A1-Y1** of the CT-MFE is without function if ON-delay is configured.

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

Applying supply voltage to terminals **A1-A2/B1**, starts timing with symmetrical ON & OFF times. The cycle starts with an OFF time first.

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




t = adjusted flashing time

The control contact **A1-Y1** of the CT-MFE is without function if ON-delay is configured.

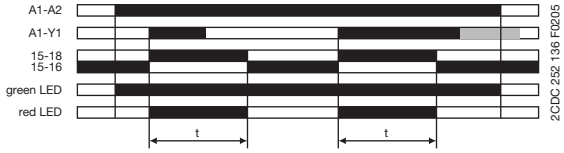
# Electronic timers
# CT-E range with relay output
## Function diagrams

### Pulse former (Single shot)
### CT-MFE

Closing the control contact connected to terminals **A1-Y1**, with 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 contact switch **A1-Y1** during the time delay has no effect.

After the time delay is complete, it can be restarted by closing control contact **A1-Y1**.

If 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.

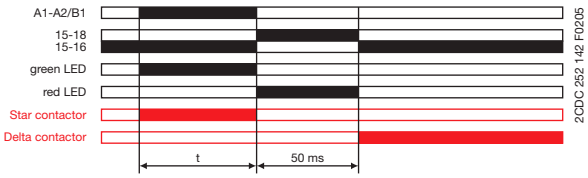
Applying supply voltage to terminals **A1-A2**, energizes the output relay. The output relay de-energizes if supply voltage is interrupted.

### Star-delta change-over
### CT-YDE

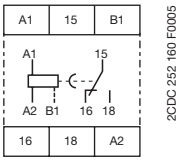
Applying supply voltage to terminals **A1-A2/B1**, energizes the star contactor (K1) and the line contactor (K2) and begins the set starting time.

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

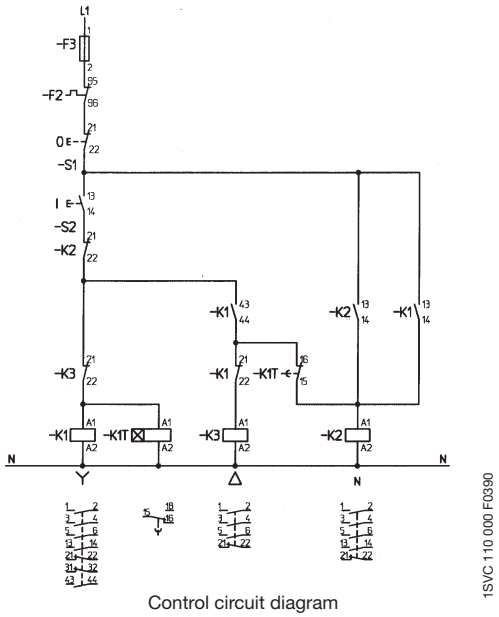
When the transition time is complete, contact **15-16** energizes the delta contactor (K3).



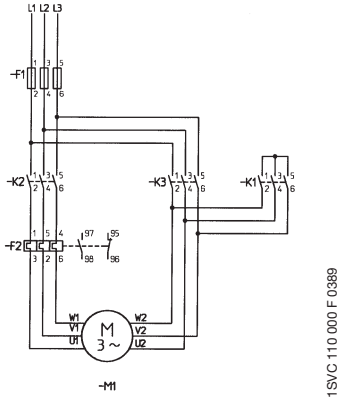

$t_1$ = adjustable starting time
$t_2$ = fixed transition time of approx.50 ms




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




Control circuit diagram




Power circuit diagram

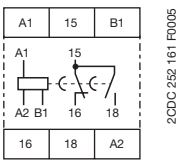
### Star-delta change-over
### CT-SDE

Applying supply voltage to terminals **A1-A2/B1**, energizes the star contactor (K1) and the line contactor (K2) and begins the set starting time.

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

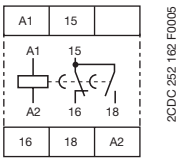
When the transition time is complete, contact **15-18** energizes the delta contactor (K3).


$t_1$ = adjustable starting time
$t_2$ = fixed transition time of approx.30 ms



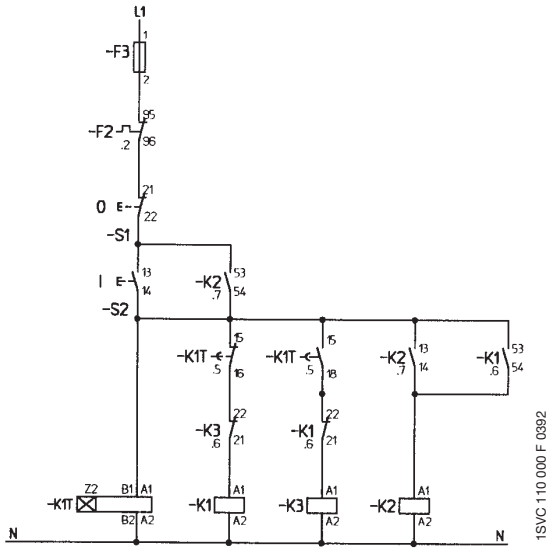

A1-A2 Supply: 220-240 V AC
A1-B1 Supply: 24 V AC/DC
15-16/18 contact

Device: 1SVR 550 217 R4100




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

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




Control circuit diagram

# Electronic timers
# CT-E range with solid-state output
## Function diagrams

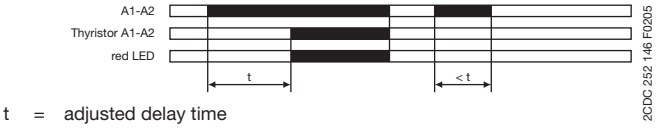


### Multifunction timer CT-MKE

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

#### ON-delay (Delay on Make)

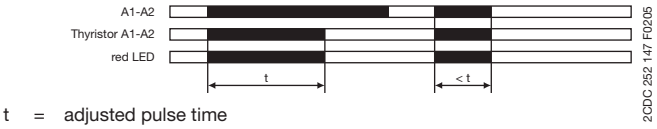
Without external connection. Timing begins when supply voltage is applied to terminal **A1** and the load connected in series **A2**. When the selected time delay is complete, the load connected to **A1-A2** energizes. If supply voltage is interrupted, the load de-energizes and the time delay is reset.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




t = adjusted delay time

#### Impulse-ON (Interval)

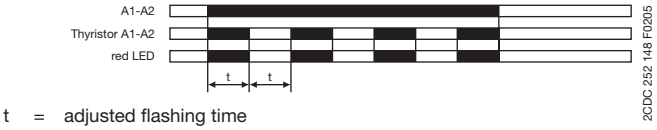
External connection **X1-X4** required. The load energizes and timing starts when supply voltage is applied to terminal **A1** and the load connected in series with **A2**. When the selected time delay is complete, the load de-energizes. Interrupting supply voltage before the time delay is complete,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




t = adjusted pulse time

#### Flasher, starting with ON

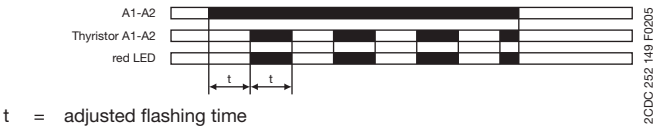
External connection **X1-X4** and **X2-X4** required. When supply voltage is applied to terminal **A1** and the load connected in series with **A2**, the load energizes and de-energizes with the selected ON & OFF times. The ON & OFF times are equal. The cycle starts with an ON time first (load energized).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

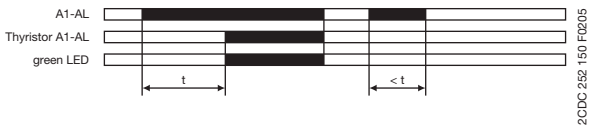
$X_3$-$X_4$ open: 3-300 s

#### ON-delay (Delay on make) CT-EKE

Timing begins when 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 supply voltage is interrupted, the load de-energizes and the time delay is reset.

Interrupting supply voltage before the time delay is complete, resets the time delay. The load does not energize.




t = adjusted delay time

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

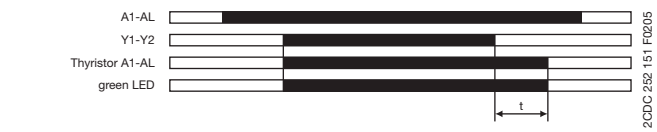
The OFF-delay function with auxiliary voltage requires continuous supply voltage at terminal **A1** and the load connected in series with **AL**, for timing.

Timing is controlled by a voltage-related (wet/non-floating) control contact, connected to terminals **Y2-A2**. When the control contact closes, the load energizes. If the control contact 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 contact **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 contact re-opens.

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




t = adjusted delay time

**Notice:**

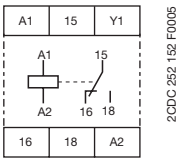
CT-...KE are solid-state timers with thyristor output for 2-wire applications. They are connected directly in series with the control coil of contactors or relays. Voltage should not be applied without a load connected, because there is no current limiting in the unit.

# Electronic timers
# CT-E range
## Connection diagrams



## Connection diagrams, positions of connecting terminals

### CT-MFE

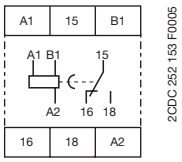



A1-A2 Supply:
24-240 V AC/DC

A1-Y1 Control contact to start timing

15-16/18 c/o contact

### CT-ERE

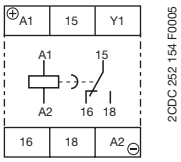



A1-A2 Supply: 220-240 V AC or
110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

### CT-AHE [1]

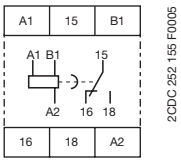



A1(+)-A2(-) Supply: 24 V AC/DC or
110-240 V AC or
220-240 V AC

A1-Y1 Control contact to start timing

15-16/18 c/o contact

### CT-ARE

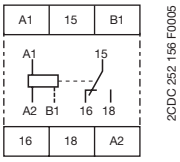



A1-A2 Supply: 220-240 V AC or
110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

### 1 CT-VWE

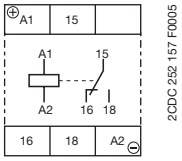



A1-A2 Supply: 220-240 V AC or
110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

### 1 CT-AWE

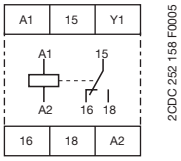



Device without aux. voltage

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]



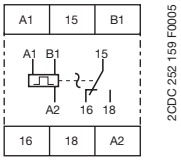

Device with aux. voltage

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

A1-Y1 Control contact to start timing

15-16/18 c/o contact

### CT-EBE

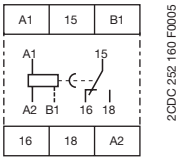



A1-A2 Supply: 220-240 V AC or
110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

### CT-YDE

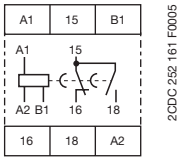



A1-A2 Supply: 220-240 V AC or
110-130 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

### 1 CT-SDE



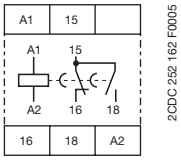

Device:
1SVR 550 217 R4100

A1-A2 Supply: 220-240 V AC

A1-B1 Supply: 24 V AC/DC

15-16/18 c/o contact

### 1 CT-SDE

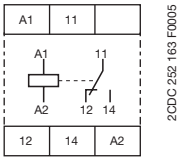



Devices:
1SVR 550 210 R4100
1SVR 550 212 R4100

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

15-16/18 c/o contact

### CT-IRE

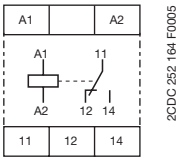



Supply terminals
diagonally positioned

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

11-12/14 c/o contact

### CT-IRE

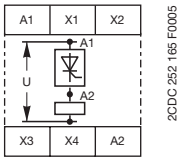



Supply terminals on one
side of the device

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

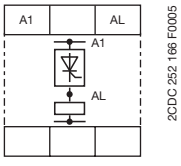
A1-A2 Thyristor

X1-X4 Timing function adjustment

X2-X4 Timing function adjustment

X3-X4 Time range adjustment
(Details see function diagrams)

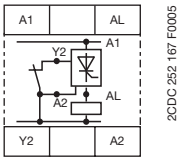
### CT-EKE




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 contact to start timing

• [1] **Wiring notes** ..... 30

# Electronic timers
# CT-E range
## Technical data

| Type | Terminals used | CT-E range | |
|---|---|---|---|
| **Input circuits** | | | |
| Supply voltage - power consumption | **A1-A2** | 24-240 V AC/DC | approx. 1.0-2.0 VA/W |
| | **A1-A2** | 24-240 V AC | approx. 1.0-2.0 VA/W |
| | **A1-A2** | 110-130 V AC | approx. 2.0 VA |
| | **A1-A2** | 220-240 V AC | approx. 2.0 VA |
| | **A1-A2** | 380-415 V AC | approx. 3.0 VA |
| | **A1-B1** | 24 V AC/DC | approx. 1.0 VA/W |
| Supply voltage tolerance | | -15...+10 % | |
| Supply voltage frequency | AC/DC versions | DC or 50/60 Hz | |
| | AC versions | 50/60 Hz | |
| Control contact connections, voltage-related[1)] | **A1-Y1** | start timing external | |
| Control voltage potential | | supply voltage | |
| Minimum control pulse length | | 20 ms | |
| Duty time | | 100 % | |
| Minimum energizing time (CT-ARE) | | 200 ms | |
| **Solid-state devices CT-MKE, CT-EKE, CT-AKE** | | | |
| Voltage drop in connected state | | ≤ 3 V | |
| Current consumption while timing | | ≤ 2 mA (24-60 V AC/DC)<br>≤ 8 mA (60-240 V AC/DC) | |
| Cable length between timer and connected load at 50 Hz and a cable capacity of 100pF/m | | at 24 V AC<br>at 42 V AC<br>at 60 V AC<br>at 110 V AC<br>at 240 V AC | 220 m / 22 nF<br>100 m / 10 nF<br>65 m / 6.5 nF<br>50 m / 5 nF<br>22 m / 2.2 nF |
| **Timing circuit** | | | |
| Time ranges | | | |
| Single-function timers | | 1 time range per unit<br>0.05-1 s, 0.1-10 s, 0.3-30 s, 3-300 s, 0.3-30 min | |
| Multifunction timers | **CT-MFE** | 8 time ranges 0.05 s - 100 h | |
| | **CT-MKE** | 2 time ranges 0.1-10 s and 3-300 s | |
| Star-delta transit time | | CT-YDE: 50 ms, CT-SDE: 30 ms | |
| Recovery time | | <50 ms (CT-MKE: <100 ms, CT-AKE: <300 ms, CT-ARE: <200 ms, CT-AWE, CT-SDE: <400 ms, CT-YDE: <500 ms) | |
| Repeat accuracy (constant parameters) | | <1 % | |
| Timing error within the supply voltage tolerance | | <0.5 % / % Δ U | |
| Timing error within operating temperature range | | <0.1 % / °C (CT-MFE: <0.06 % / °C) | |
| **Indication of operational states** | | | |
| Supply voltage | | green LED | |
| Output relay energized | | red LED | |
| **Output circuits relay devices** | **15-16/18** | | |
| Number of contacts | | relay, 1 c/o contact | |
| Contact material | | AgCdO | |
| Rated voltage | acc. to VDE 0110, IEC 60947-1 | 250 V | |
| Maximum switching voltage | | 250 V AC, 250 V DC | |
| Rated switching current acc. to IEC 60947-5-1 | AC-12 (resistive) 230 V | 4 A | |
| | AC-15 (inductive) 230 V | 3 A | |
| | DC-12 (resistive) 24 V | 4 A | |
| | DC-13 (inductive) 24 V | 2 A | |
| Maximum lifetime | mechanical | 30 x $10^6$ switching cycles | |
| | electrical (AC-12, 230 V, 4 A) | 0.1 x $10^6$ switching cycles | |
| Short circuit proof, max. fuse rating | n/c | 10 A fast, operating class gL (CT-ARE: 5 A) | |
| | n/o | 10 A fast, operating class gL (CT-ARE: 5 A) | |

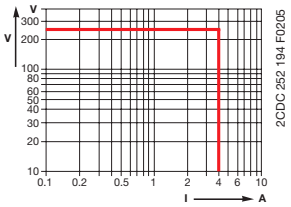
• [1)] **Connection diagrams** ..... 27 • [1)] **Wiring notes** ..... 30

# Electronic timers
# CT-E range
## Technical data (continued), load limit curves

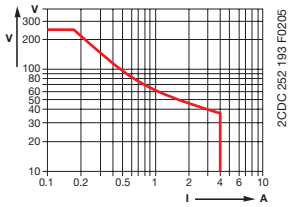
| | | CT-E range |
|---|---|---|
| **Output circuits solid-state devices CT-MKE, CT-EKE, CT-AKE** | | **A1-A2, A1-AL** |
| | | Thyristor (CT-MKE, CT-EKE, CT-AKE) |
| Rated voltage | acc. to VDE 0110, IEC 60947-1 | 250 V |
| Max. switching voltage | | 240 V |
| Min. load current | | 20 mA (CT-EKE, CT-AKE: 10 mA) |
| Max. load current | | 0.8 A at TA = 20 °C (CT-EKE, CT-AKE: 0.7 A) |
| Load current reduction / derating | | 10 mA/°C |
| Max. surge current | | ≤ 20 A for t ≤ 20 ms (CT-EKE, CT-AKE: ≤ 15 A) |
| **General data** | | |
| Width of the enclosure | | 22.5 mm |
| Wire size | fine-strand with wire end ferrule | 2 x 1.5 mm² (2 x 16 AWG) |
| | fine-strand without wire end ferrule | |
| | rigid | |
| Weight | | approx. 80 g (2.8 oz) |
| Mounting position | | any |
| Degree of protection enclosure / terminals | | IP50 / IP20 |
| Operating temperature | | -20...+60 °C |
| Storage temperature | | -40...+85 °C |
| Mounting | | DIN rail (EN 50022) |
| **Standards** | | |
| Product standard | | IEC 61812-1, EN 61812-1 |
| EMC Directive | | 89/336/EEC |
| Electromagnetic compatibility | acc. to EN 61000-6-2, EN 61000-6-4 | |
| ESD | acc. to IEC 61000-4-2, EN 61000-4-2 | level 3 6 kV / 8 kV |
| HF radiation resistance | acc. to IEC 61000-4-3, EN 61000-4-3 | level 3 10 V/m |
| Burst | acc. to IEC 61000-4-4, EN 61000-4-4 | level 3 2 kV / 5 kHz |
| Surge | acc. to IEC 1000-4-5, EN 61000-4-5 | level 4 2 kV L-L |
| HF line emission | acc. to IEC 1000-4-6, EN 61000-4-6 | level 3 10 V |
| Low Voltage Directive | | 73/23/EEC |
| Operational reliability | acc. to IEC 68-2-6 | 6 g |
| Mechanical resistance | acc. to IEC 68-2-6 | 10 g |
| **Approvals / marks** | | **see table of approvals and marks** |
| **Isolation data** | | |
| Rated insulation voltage between supply circuit, control circuit and output circuit | acc. to VDE 0110, IEC 60947-1 | supply up to 240 V: 300 V<br>supply up to 440 V: 500 V |
| Rated impulse withstand voltage between all isolated circuits | acc. to VDE 0110, IEC 664 | 4 kV / 1.2-50 µs |
| Test voltage between all isolated circuits | | 2.5 kV, 50 Hz, 1 min. |
| Pollution category | acc. to VDE 0110, IEC 664, IEC 255-5 | III/C |
| Overvoltage category | acc. to VDE 0110, IEC 664, IEC 255-5 | III/C |
| Environmental testing | acc. to IEC 68-2-30 | 24 h cycle time, 55 °C, 93 % rel., 96 h |

## Load limit curves

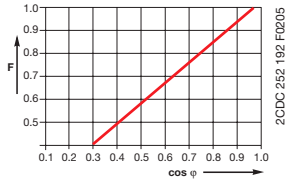
AC load (resistive)



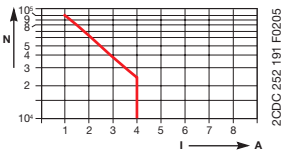

DC load (resistive)




Derating factor F for inductive AC load




Contact lifetime /switching cycles N

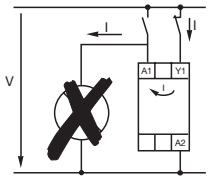


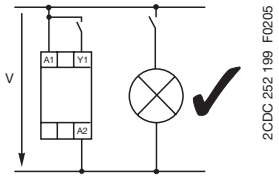

220 V 50 Hz 1 AC
360 cycles/h

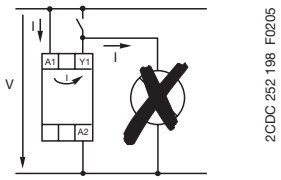
# Electronic timers
# CT-E range
## Wiring notes, Dimensional drawing

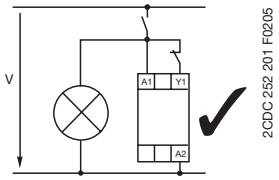
### Wiring notes

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



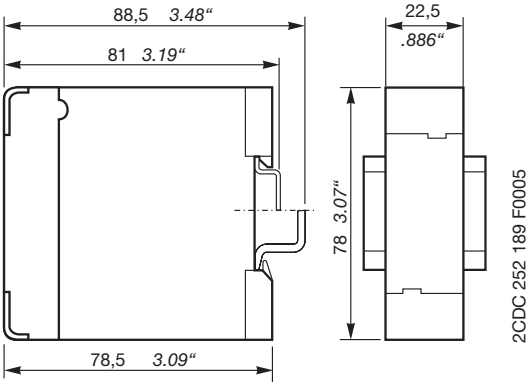




### Dimensional drawing

Dimensions in mm



# Electronic timers
# CT-S range

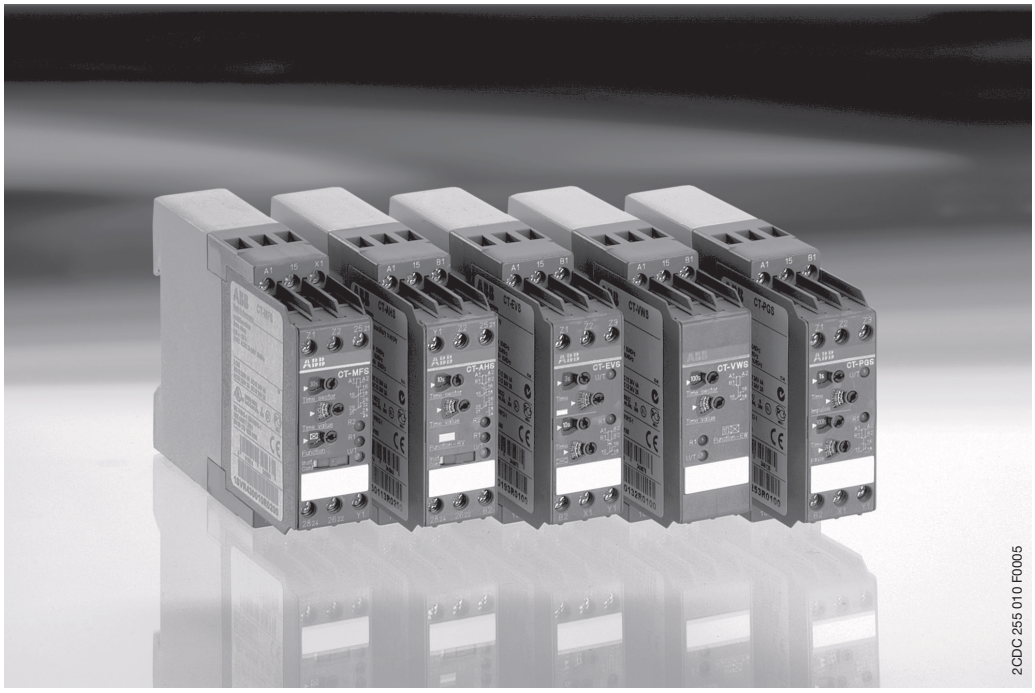


## Content

# Electronic timers
# CT-S range
## Benefits and advantages

### CT-S Reihe - the high end timers

Universal and economic

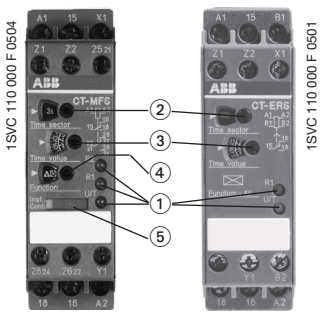



- 4 multifunction, 22 multirange timers and 2 switching relays
- Supply voltage - Continuous range or multiranges
- Devices with:
  - 1 or 2 c/o contacts (250 V / 4 A)
  - 2nd c/o contact can be selected as instantaneous contact
  - Remote potentiometer connection feature
  - Starting the time delay is possible via an external (volt-free (dry / floating) control contact or via the supply voltage
  - Pause timing is possible via an external control contact
- Sealable transparent cover for protection against unauthorized changes of time and threshold values
- Integrated marker label
- Approvals / Marks (depending on device)

cULus, GL, PCT, CB scheme, CCC / CE, RCM

### Operating controls

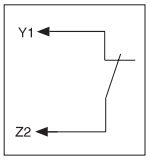
① LEDs for status indication
R2: red LED - output relay 2 energized
R1: red LED - output relay 1 energized
U: green LED - supply voltage
U/T: green LED - supply voltage (LED flashing while timing)
② Time range adjustment
③ Fine adjustment of the desired time delay
④ Preselection of the desired timing function
⑤ Set the 2nd c/o contact as an instantaneous contact




multifunctional single-functional

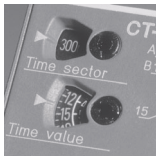
### Volt-free (dry / floating) control contacts

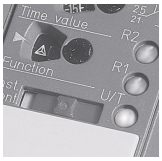
The CT-S range timers are controlled by so-called volt-free (dry / floating) control contacts which allows a cable of up to 50 m.




### Time range preselection and fine adjustment

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



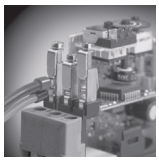




### LEDs for status indication

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.





### Connection of remote potentiometers

When an external potenziometer is connected, the internal potenziometer is disabled.

### Integrated marker label

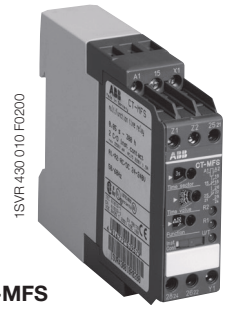
Integrated marker labels allow the product to be marked quickly and simply. No additional marking labels are required.



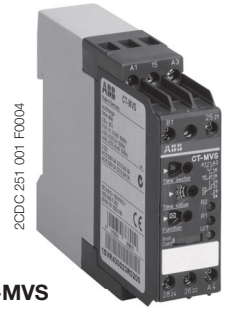
### Sealable transparent cover

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

# Electronic timers
# CT-S range
## Ordering details




**CT-MFS**
**- 2 c/o contacts**




**CT-MVS**
**- 2 c/o contacts**


**CT-MBS**
**- 2 c/o contacts**


**CT-ERS**
**- 1 c/o contact**


**CT-ERS**
**- 2 c/o contacts**

| Supply voltage | Control contact to start timing | Control contact to pause timing | Remote potentio-meter connection | Order code | Price 1 piece |
|---|---|---|---|---|---|
| **Multifunction timers** | | | | | |
| **CT-MFS:** 8 functions[1], 10 time ranges (0.05 s - 300 h), 2 c/o contacts[2], 3 LEDs | | | | | |
| 24-240 V AC/DC | ■ | ■ | ■ | **1SVR 430 010 R0200** | |
| **CT-MVS:** with voltage-related control input 8 functions[1], 10 time ranges (0.05 s - 300 h), 2 c/o contacts[2], 3 LEDs | | | | | |
| 24 V / 42-48 V AC/DC, 110-240 V AC | ■ | | | **1SVR 430 023 R0200** | |
| **CT-MBS:** 8 functions[1], 10 time ranges (0.05 s - 300 h), 2 c/o contacts[2], 3 LEDs | | | | | |
| 12-40 V AC, 12-60 V DC | ■ | | ■ | **1SVR 430 010 R1200** | |
| 24 V AC/DC, 110-240 V AC | | | | **1SVR 430 012 R0200** | |
| 380-440 V AC | | | | **1SVR 430 011 R2200** | |
| **CT-MBS:** 6 functions[3], 10 time ranges (0.05 s - 300 h), 1 c/o contact, 2 LEDs | | | | | |
| 12-40 AC / 12-60 V DC | ■ | ■ | ■ | **1SVR 430 010 R1100** | |
| 24 V / 42-48 V AC/DC, 110-240 V AC | | | | **1SVR 430 013 R0100** | |
| 380-440 V AC | | | | **1SVR 430 011 R2100** | |
| **ON-delay timers** ✉ | | | | | |
| **CT-ERS:** 10 time ranges (0.05 s - 300 h), 1 c/o contact, 2 LEDs | | | | | |
| 12-40 V AC / 12-60 V DC | | | | **1SVR 430 100 R1100** | |
| 24 V AC/DC, 110-240 V AC | | | | **1SVR 430 102 R0100** | |
| 380-440 V AC | | | | **1SVR 430 101 R2100** | |
| **CT-ERS:** 10 time ranges (0.05 s - 300 h), 1 c/o contact, 2 LEDs | | | | | |
| 24 V / 42-48 V AC/DC, 110-240 V AC | ■ | ■ | ■ | **1SVR 430 103 R0100** | |
| **CT-ERS:** 10 time ranges (0.05 s - 300 h), 2 c/o contacts[2], 3 LEDs | | | | | |
| 12-40 V AC / 12-60 V DC | | | | **1SVR 430 100 R1200** | |
| 24 V / 42-48 V AC/DC, 110-240 V AC | | | ■ | **1SVR 430 103 R0200** | |
| 380-440 V AC | | | | **1SVR 430 101 R2200** | |

1) Functions: ON-delay, OFF-delay, impulse-ON, impulse-OFF, flasher starting with ON, flasher starting with OFF, 2 x star-delta
2) 2nd change-over contact can be selected as instantaneous switching contact (via front-face sliding switch)
3) Functions: ON-delay, OFF-delay, impulse-ON, impulse-OFF, flasher starting with ON, flasher starting with OFF

Packing unit: 1 piece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# Electronic timers
# CT-S range
## Ordering details


**CT-AHS**
**- 1 c/o contact**


**CT-VBS**


**CT-EAS**
**- 1 c/o contact**


**CT-VWS**
**- 2 c/o contacts**


**CT-AWS**
**- 2 c/o contacts**

| Supply voltage | Control contact to start timing | Control contact to pause timing | Remote potentio-meter connection | Order code | Price 1 piece |
|---|---|---|---|---|---|
| **OFF-delay timers** ■ | | | | | |
| **CT-AHS:** 10 time ranges (0.05 s - 300 h), 1 c/o contact, 2 LEDs | | | | | |
| 24 V / 42-48 V AC/DC, 110-240 V AC | ■ | ■ | ■ | **1SVR 430 113 R0100** | |
| **CT-AHS:** 10 time ranges (0.05 s - 300 h), 2 c/o contacts[2], 3 LEDs | | | | | |
| 24 V / 42-48 V AC/DC, 110-240 V AC | ■ | | | **1SVR 430 113 R0200** | |
| **CT-APS:** with voltage-related input, 10 time ranges (0.05 s - 300 h), 2 c/o contacts[2], 3 LEDs | | | | | |
| 24 V / 42-48 V AC/DC, 110-240 V AC | ■ | | | **1SVR 430 183 R0300** | |
| **CT-ARS:** without auxiliary voltage, 7 time ranges (0.05 s - 10 min), 1 c/o contact, 2 LEDs | | | | | |
| 24-240 V AC/DC | | | | **1SVR 430 120 R0100** | |
| **CT-ARS**: without auxiliary voltage, 7 time ranges (0.05 s - 10 min), 2 c/o contacts, 2 LEDs | | | | | |
| 24-240 V AC/DC | | | ■ | **1SVR 430 120 R0300** | |
| **CT-VBS:** for DC coils without auxiliary voltage | | | | | |
| 100-127 V DC | | | | **1SVR 430 261 R6000** | |
| 200-240 V DC | | | | **1SVR 430 261 R5000** | |
| **ON-delay and OFF-delay timers** ⊠■ | | | | | |
| **CT-EAS:** symmetrical times, 10 time ranges (0.05 s - 300 h), 1 c/o contact, 2 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | ■ | ■ | ■ | **1SVR 430 173 R0100** | |
| **CT-EAS:** symmetrical times, 10 time ranges (0.05 s - 300 h), 2 c/o cont.[2], 3 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | ■ | | | **1SVR 430 173 R0200** | |
| **CT-EVS:** asymmetrical times[1], 2x10 time ranges (0.05 s - 300 h), 1 c/o cont., 2 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | ■ | ■ | ■ | **1SVR 430 193 R0100** | |
| **Impulse-ON timers** 1⎍⊠ | | | | | |
| **CT-VWS:** 10 time ranges (0.05 s - 300 h), 1 c/o contact, 2 LEDs | | | | | |
| 24 V AC/DC, 110-240 V AC | | | | **1SVR 430 132 R0100** | |
| **CT-VWS:** 10 time ranges (0.05 s - 300 h), 2 c/o contacts[2], 3 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | | | ■ | **1SVR 430 133 R0200** | |
| **Impulse-OFF timers** 1⎍■ | | | | | |
| **CT-AWS:** 10 time ranges (0.05 s - 300 h), 1 c/o contact, 2 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | ■ | ■ | ■ | **1SVR 430 143 R 0100** | |
| **CT-AWS:** 10 time ranges (0.05 s - 300 h), 2 c/o contacts[2], 3 LEDs | | | | | |
| 24 V , 42-48 V AC/DC, 110-240 V AC | ■ | | | **1SVR 430 143 R 0200** | |

1) ON- and OFF-delay times adjustable independently
2) 2nd c/o contact selectable as instantaneous contact
Packing unit: 1 piece


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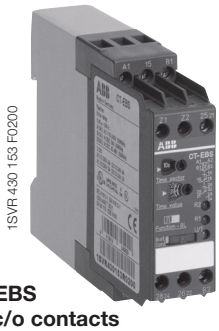
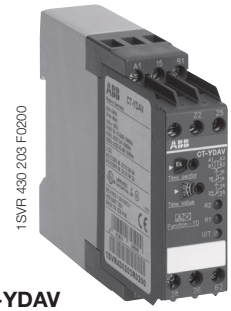
# Electronic timers
# CT-S range
## Ordering details

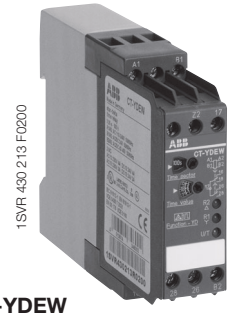



**CT-EBS**
**- 2 c/o contacts**


**CT-TGS**
**- 1 c/o contact**




**CT-YDAV**
**- 2 c/o contacts**




**CT-YDEW**
**- 2 c/o contacts**


**CT-IRS**
**- 2 c/o contacts**

| Supply voltage | Control contact to start timing | Control contact to pause timing | Remote potentio-meter connection | Order code | Price 1 piece |
|---|---|---|---|---|---|
| **Flashers starting with OFF** ⎍■ | | | | | |
| **CT-EBS:** symmetrical ON/OFF intervals, 10 time ranges (0.05 s - 300 h), 1 c/o contacts, 2 LEDs | | | | | |
| 24 V AC/DC, 110-240 V AC | | | | **1SVR 430 152 R0100** | |
| **CT-EBS:** symmetrical ON/OFF intervals, 10 time ranges (0.05 s - 300 h), 2 c/o contacts[2], 3 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | | | ■ | **1SVR 430 153 R0200** | |
| **Pulse generators** ⎍▩ | | | | | |
| **CT-TGS:** 2x10 time ranges (0.05 s - 300 h) [3], 1 c/o contact, 2 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | ■ | ■ | ■ | **1SVR 430 163 R0100** | |
| **CT-PGS:** single pulse, 2x10 time ranges (0.05 s - 300 h) [3], 1 c/o contact, 2 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | ■ | ■ | ■ | **1SVR 430 253 R0100** | |
| **Star-delta change-over twice ON-delayed** △⋈ | | | | | |
| **CT-YDAV:** 10 time ranges (0.05 s - 300 h), 50 ms change-over time, 2 c/o contacts, 3 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | | | | **1SVR 430 203 R0200** | |
| 380-440 V AC | | | | **1SVR 430 201 R2300** | |
| **Star-delta change-over with impulse** △1⎍ | | | | | |
| **CT-YDEW:** 10 time ranges (0.05 s - 300 h), 50 ms change-over time, 2 c/o contact s: 1x OFF-delayed, 1x ON-delayed, 3 LEDs | | | | | |
| 24 V, 42-48 V AC/DC, 110-240 V AC | | | | **1SVR 430 213 R0200** | |
| **Switching relays** ▭ | | | | | |
| **CT-IRS:** 1 c/o contact, 2 LEDs | | | | | |
| 24 V AC/DC | | | | **1SVR 430 220 R9100** | |
| 42-48 V AC/DC | | | | **1SVR 430 220 R8100** | |
| 110-240 V AC | | | | **1SVR 430 221 R7100** | |
| **CT-IRS:** 2 c/o contacts, 1 LED | | | | | |
| 24 V AC/DC | | | | **1SVR 430 220 R9300** | |
| 42-48 V AC/DC | | | | **1SVR 430 220 R8300** | |
| 110-240 V AC | | | | **1SVR 430 221 R7300** | |
| **CT-IRS:** 2 c/o contacts, with gold-plated contacts, 1 LED | | | | | |
| 24 V AC/DC | | | | **1SVR 430 230 R9300** | |
| 110-240 V AC/DC | | | | **1SVR 430 231 R7300** | |
| **CT-IRS:** 3 c/o contacts, 1 LED | | | | | |
| 24 V AC/DC | | | | **1SVR 430 220 R9400** | |
| 42-48 V AC/DC | | | | **1SVR 430 220 R8400** | |
| 220-240 V AC | | | | **1SVR 430 221 R1400** | |

1) 2nd c/o contact selectable as instantaneous contact
2) ON and OFF times adjustable independently, 2 remote potentiometer connectable
Packing unit: 1 piece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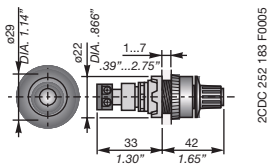
# Electronic timers
# CT-S range
## Accessories

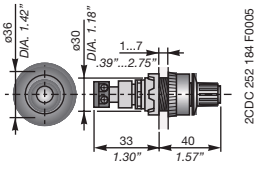

1SVC 110 000 F 0507

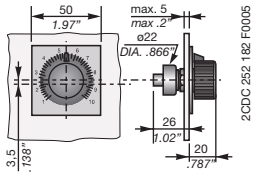
### Remote potentiometer

50 kΩ ±20 % - 0.2 Ω with direct reading scale (graduated scale supplied)

| Diameter mm | Degree of protection | **Order code** | Pack. unit pieces | **Price** 1 piece | Weight 1 piece kg/lb |
|---|---|---|---|---|---|
| 30.5 | IP65 | **1SVR 700 800 R1000** | 1 | | 0.04/0.09 |
| 22.5 | IP65 | **1SVR 701 800 R1000** | 1 | | 0.04/0.09 |
| 10.5 | IP40 | **1SVR 214 017 R0900** | 1 | | 0.04/0.09 |

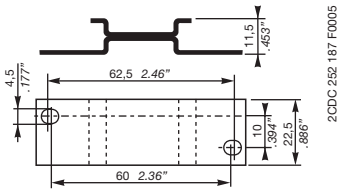


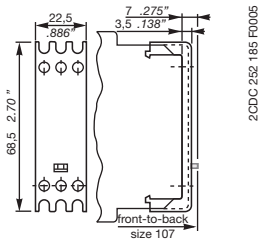

### Adapter for screw mounting on panel

| Enclosure width in mm | **Order code** | Pack. unit pieces | **Price** 1 piece | Weight 1 piece kg/lb |
|---|---|---|---|---|
| 22.5 | **1SVR 430 029 R0100** | 1 | | 0.02/0.05 |



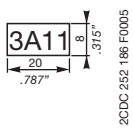

### Sealable cover

| Enclosure width in mm | **Order code** | Pack. unit pieces | **Price** 1 piece | Weight 1 piece kg/lb |
|---|---|---|---|---|
| 22.5 | **1SVR 430 005 R0100** | 1 | | 0.02/0.05 |




### Marker label

| | **Order code** | Pack. unit pieces | **Price** 1 piece | Weight 1 piece kg/lb |
|---|---|---|---|---|
| | **1SVR 366 017 R0100** | 1 | | 0.02/0.05 |



# Electronic timers
# CT-S range
## Function diagrams

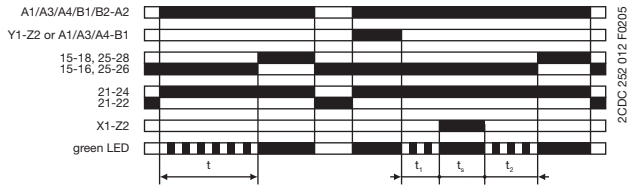
### ON-delay (delay on make) CT-ERS, CT-MBS, CT-MFS, CT-MVS

If control contact **Y1-Z2** is open, the timer is started as soon as the supply voltage is applied. The green LED flashes while timing. After the adjusted delay time has elapsed, the output relay is energized and the flashing LED turns steady. If the supply voltage is interrupted, the output relay resets and the elapsed time is reset. Timing can also be started by opening control contact **Y1-Z2** with the supply voltage applied.

If control contact **Y1-Z2** closes after the supply voltage has been applied, all the internal functions are reset. By closing control contact **X1-Z2** the timer can be stopped. The elapsed time is stored. Timing continues if the contact is opened again. This can be repeated as often as required.

By setting the sliding switch to position Inst., the 2nd c/o contact operates immediately when the supply voltage is applied and the timer starts. If the supply voltage is disconnected, both c/o contacts reset.

By connecting a remote potentiometer to the terminals **Z1-Z2** the time can be adjusted externally. The internal potentiometer is automatically switched off, if an external potentiometer is connected.




t = adjusted delay time
$t_s$ = storage time $t = t_1 + t_2$

### OFF-delay (delay on break) - volt-free (dry) control input CT-AHS, CT-MBS, CT-MFS

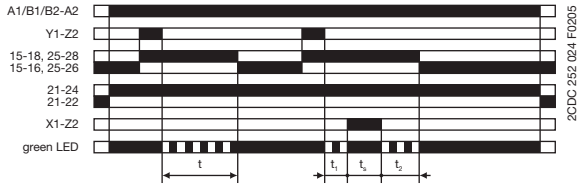
This function requires continuous supply voltage at the terminals **A1/ B1/ B2-A2** for timing.

Timing is controlled by a volt-free (dry) contact at the terminals **Y1-Z2**. If the contact is closed, the output relay is energized. If the contact is opened, the adjusted time starts to elapse (minimum control pulse length: 20 ms). The green LED flashes while timing. The LED turns steady and the output relay is de-energized if the timer has elapsed.

The timer can be stopped by closing control contact **X1-Z2** . The elapsed time is stored. Timing continues if the contact is opened again. This can be repeated as often as required.

By setting the sliding switch to position Inst., the 2nd c/o contact operates immediately when the supply voltage is applied and the timer starts. If the supply voltage is disconnected, both c/o contacts reset.

By connecting a remote potentiometer to the terminals **Z1-Z2** the time can be adjusted externally. The internal potentiometer is automatically switched off, if an external potentiometer is connected.



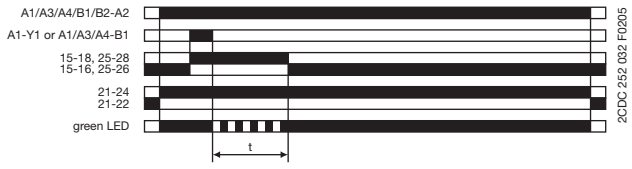

t = adjusted delay time
$t_s$ = storage time $t = t_1 + t_2$

### OFF-delay (delay on break) - voltage-related control input CT-APS, CT-MVS

The OFF-delay time relay CT-APS and CT-MVS require continuous supply voltage at the terminals **A1/A3/A4/B1/B2-A2** respectively.

Timing is controlled by a voltage-related (e.g. A1) contact at terminal **Y1**. If the control contact is closed the output relay is energized. If the control contact is opened, the adjusted time starts to elapse (minimum control pulse length 20 ms). The green LED flashes while timing. The LED turns steady and the output relay is de-energized if the timer has elapsed.

By setting the sliding switch to position Inst., the 2nd c/o contact operates immediately when the supply voltage is applied and the timer starts. If the supply voltage is disconnected, both c/o contacts reset .




t = adjusted delay time

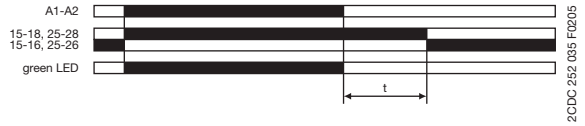
### OFF-delay (true delay on break) - without auxiliary voltage CT-ARS

CT-ARS is an OFF-delay timer which does not require supply voltage at the terminals **A1-A2** while timing.

After a storage time of several months, a charging time of about 5 minutes is necessary. For this, voltage must be applied to the unit. After applying voltage, the output relay is energized and after disconnecting the supply voltage, the preset time starts to elapse.

By connecting a remote potentiometer to the terminals **Z1-Z2**, the time can be set externally. When connecting a remote potentiometer, the factory-mounted jumper on the terminals **Z1-Z2** has to be removed and the internal potentiometer has to be set to the lowest possible value.

For correct function of the unit, it is necessary to observe the minimum energizing time. As soon as the timer starts to elapse, both LEDs will turn off.

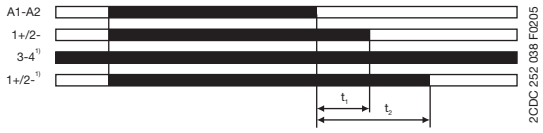



t = adjusted delay time

# Electronic timers
# CT-S range
## Function diagrams, delay time diagrams

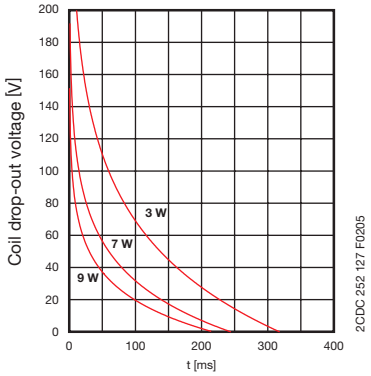
### OFF-delay - for DC coils without auxiliary voltage
### CT-VBS

The DC contactor connected to the output is energized when supply voltage is applied to terminals **A1** and **A2**. If supply voltage is disconnected, the DC contactor 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.

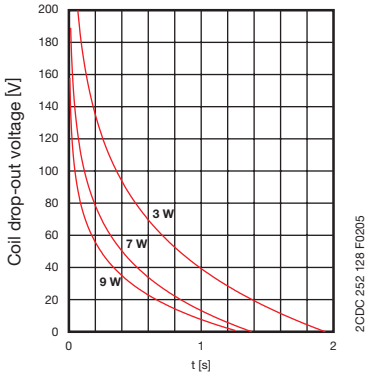



$t_1$ = OFF-delay (without jumper between terminal 3 and 4 [1])
$t_2$ = OFF-delay (with jumper between terminal 3 and 4 [1])
[1] only for version 200-240 V AC

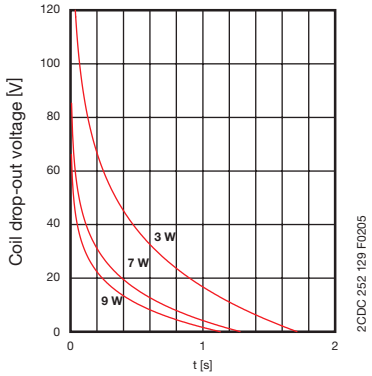
### Delay time diagrams CT-VBS




Delay time guideline values
200-240 V AC version without jumper 3/4




Delay time guideline values
200-240 V AC version with jumper 3/4




Delay time guideline values
110-127 V AC version

### Symmetrical ON- and OFF-delay
### CT-EAS

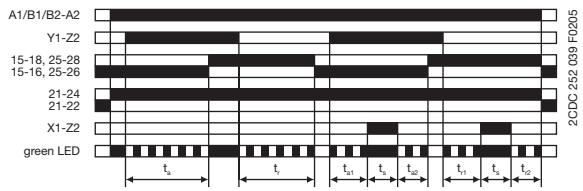
The time relay requires continuous supply voltage at the terminals **A1/B1/B2- A2** respectively.

The ON- and OFF-delay times of CT-EAS are symmetrical. The ON-delay function starts when control contact **Y1-Z2** closes. The OFF-delay is started after the timer has elapsed and after control contact **Y1-Z2** is opened.

The green LED flashes during timing of both functions.

If the sliding switch is set to the "Inst." position, the 2nd c/o contact is energized immediately and the 1st change-over contact is energized after the delay time has elapsed.

Both c/o contacts reset if the supply voltage is disconnected.




$t_a$ = ON-delay: $t_a = t_{a1} + t_{a2}$
$t_r$ = OFF-delay: $t_r = t_{r1} + t_{r2}$
$t_s$ = storage time
$t_a = t_r$

### Asymmetrical ON- and OFF-delay
### CT-EVS

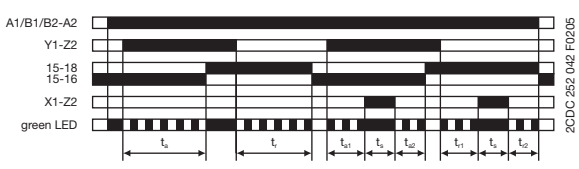
The time relay requires continuous supply voltage at the terminals **A1/B1/B2- A2** respectively.

The ON- and OFF-delay times of CT-EVS are asymmetrical. The ON-delay function starts when control contact **Y1-Z2** closes. The OFF-delay is started after the timer has elapsed and after control contact **Y1-Z2** is opened.

The green LED flashes during timing of both functions.

If the sliding switch is set to the "Inst." position, the 2nd c/o contact is energized immediately and the 1st change-over contact is energized after the delay time has elapsed.

Both c/o contacts reset if the supply voltage is disconnected.




$t_a$ = ON-delay: $t_a = t_{a1} + t_{a2}$
$t_r$ = OFF-delay: $t_r = t_{r1} + t_{r2}$
$t_s$ = storage time
$t_a$ and $t_r$ independently adjustable

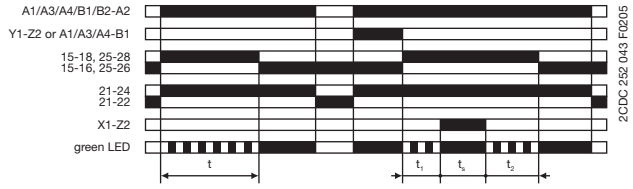
### 1⎍⊠ Impulse-ON (Interval)
### CT-VWS, CT-MFS, CT-MVS, CT-MBS

The output relay is energized without delay when the supply voltage is applied to the terminals **A1/B1/B2-A2** and is de-energized after the set pulse time has elapsed. The green LED flashes while timing. The flashing LED turns steady as soon as the set pulse time has elapsed. Timing can also be started by opening control contact **Y1-Z2** with the supply voltage applied.

By closing the control contact **X1-Z2,** the timer can be stopped. The elapsed time is stored. Timing continues by opening the contact. This can be repeated as often as required.

If the sliding switch is set to the Inst. position, the 2nd c/o contact is energized immediately after the supply voltage is applied and timing is started. The 2nd change-over contact resets if the supply is disconnected.

By connecting a remote potentiometer to the **Z1-Z2** terminals, the time can be set externally. When connecting an external potentiometer the internal potentiometer is switched off automatically.



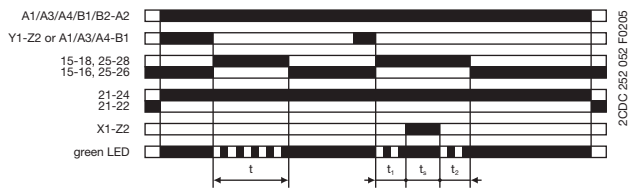

t = adjusted pulse time
$t_s$ = storage time
$t = t_1 + t_2$

### 1⎍■ Impulse-OFF (Trailing edge interval)
### CT-AWS, CT-MFS, CT-MVS, CT-MBS

For the impulse-OFF function, supply voltage must be applied continuously. By opening control contact **Y1-Z2,** the output relay is energized immediately and timing starts. The green LED flashes while timing. After the adjusted pulse time has elapsed the flashing LED turns steady and the output relay resets . Timing can be stopped by closing control contact **X1-Z2**. The elapsed time is stored. Timing continues by opening the contact.

This function can be repeated as often as required. If the sliding switch is set to the Inst. position, the 2nd change-over contact is energized immediately after the supply voltage is applied and timing is started. The contact resets if the supply is disconnected.

By connecting a remote potentiometer to the **Z1-Z2** terminals, the time can be set externally. When connecting an external potentiometer the internal potentiometer is switched off automatically.



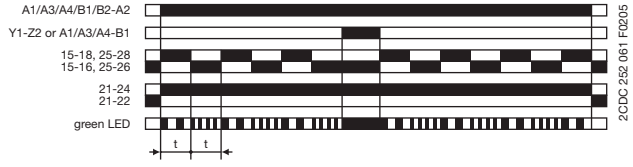

t = adjusted pulse time
$t_s$ = storage time
$t = t_1 + t_2$

### ⎍⊠ Flasher starting with ON (Recycling equal times, ON first)
### CT-MFS, CT-MVS, CT-MBS

After connecting the supply voltage to **A1/B1/B2-A2,** the timer starts to pulse with symmetrical ON/ OFF cycles. The cycles are displayed by the flashing green LED, which flashes twice as fast during the OFF cycle. If control contact **Y1-Z2** is opened while the supply voltage is applied, the output relay is de-energized.

Opening the control contact again, restarts the relay to pulse again with the preset cycle. If the sliding switch is set to the Inst. position, the 2nd c/o contact is energized immediately after the supply voltage is applied.

By connecting a remote potentiometer to the **Z1-Z2** terminals, the time can be set externally. When connecting an external potentiometer the internal potentiometer is switched off automatically.




t = adjusted flashing time

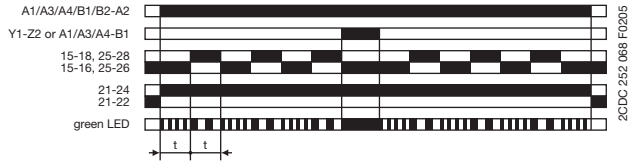
### ⎍■ Flasher starting with OFF (Recycling equal times, OFF first)
### CT-EBS, CT-MFS, CT-MVS, CT-MBS

After connecting the supply voltage to **A1/B1/B2-A2,** the timer starts to pulse with symmetrical ON/ OFF cycles. The cycles are displayed by the flashing green LED, which flashes twice as fast during the OFF cycle. If control contact **Y1-Z2** is opened while the supply voltage is applied, the output relay is de-energized.

Opening the control contact again, restarts the relay to pulse again with the preset cycle. If the sliding switch is set to the "Inst." position, the 2nd c/o contact is energized immediately after the supply voltage is applied.

The contact resets if the supply voltage is disconnected.

By connecting a remote potentiometer to the terminals **Z1-Z2** the timer can be set externally, the internal potentiometer is switched off automatically.




t = adjusted flashing time

# Electronic timers
# CT-S range
## Function diagrams

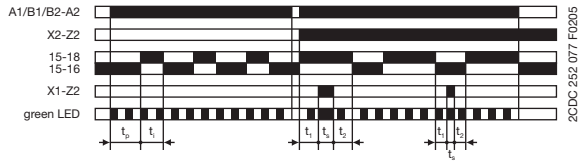
### Pulse generator (Recycling unequal times)
### CT-TGS

ON and OFF times ranging from 50 ms to 300 h can be set independently of each other. Time ranges are set using two rotary switches. The desired time values are adjusted using built-in potentiometers with direct reading scales. Remote adjustment can be performed via two remote potentiometers.

The internal potentiometers are switched off automatically when remote potentiometers are connected. The function can be changed from "OFF" starting cycle to "ON" starting cycle by means of an external connection between the terminals **X2-Z2**. The assignment of the internal and external potentiometers remains unchanged.

By closing control contact **X1-Z2**, the timer for the ON/OFF cycle can be stopped. The elapsed time value is stored. By opening the contact again, the timer continues timing from this point. This function can be repeated as often as required.

After applying the supply voltage to **A1/B1/B2-A2**, the CT-TGS starts to work with an "ON" cycle or an "OFF" cycle, as selected. The "ON"/ "OFF" cycles are displayed by the flashing green LED.




$t_p$ = OFF time
$t_s$ = Storage time (when time stop)

$t_i$ = ON time
$t_p/t_i = t_1 + t_2$ (when time stop)

Selection starting with ON or OFF time:
X2-Z2 (open) = starting with OFF
X2-Z2 (closed) = starting with ON

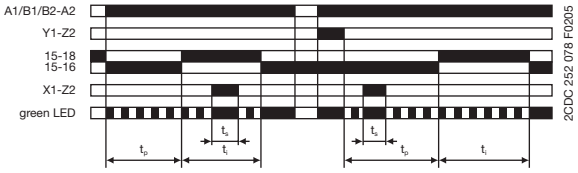
Remote potentiometer connection:
Z1-Z2: OFF time
Z3-Z2: ON time

### Single pulse generator (Delay on make interval)
### CT-PGS

When applying the supply voltage to **A1/B1/B2-A2**, the output relay is energized after the preset delay on operate time and de-energized after the delay on release time has elapsed. Timing can be stopped by closing control contact **X1-Z2**. When opening the contact again, the timer will continue at the stored time value.

If the supply voltage is applied, timing can also be started by opening the control contact **Y1-Z2**. If control contact **Y1-Z2** is closed after the supply voltage is applied, the internal function is reset.

With the CT-PGS, a single pulse can be processed with delay.




$t_p$ = OFF time
$t_s$ = Storage time (when time stop)

$t_i$ = ON time
$t_p/t_i = t_1 + t_2$ (when time stop)

Remote potentiometer connection:
Z1-Z2: OFF time
Z3-Z2: ON time

### Switching relay
### 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.

If the supply voltage is applied to the terminals **A1-A2**, the output relay is energized after approx. 10 ms.

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


n = 1, 2 or 3

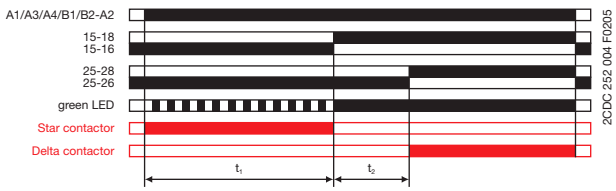
# Electronic timers
# CT-S range
## Function diagrams - Star-delta applications

### Star-delta change-over, twice ON-delayed
### CT-YDAV, CT-MFS, CT-MBS, CT-MVS

The CT-YDAV and the function of the multifunction timer CT-MFS, CT-MBS, CT-MVS respectively, is designed especially for star-delta starting of squirrel cage motors. It uses two separate timing circuits: a variable timing circuit for the starting time in star-mode, and a fixed timing circuit with 50 ms for the transition from the star to the delta contactor.

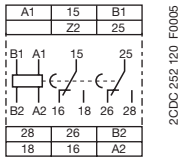
If the supply voltage is applied to **A1/A3/A4/B1/B2-A2**, the first output relay is energized after the adjusted delay time. The second output relay is energized after another 50 ms.

Timing is displayed by the flashing green LED.

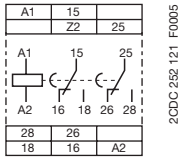



$t_1$ = adjustable starting time
$t_2$ = transition time (approx. 50 ms)

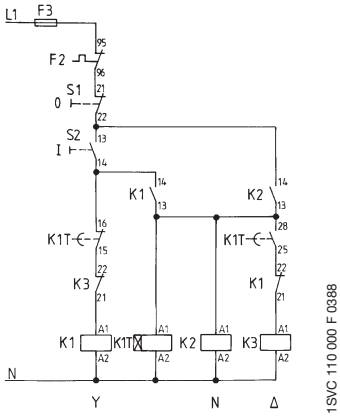
Example CT-YDAV



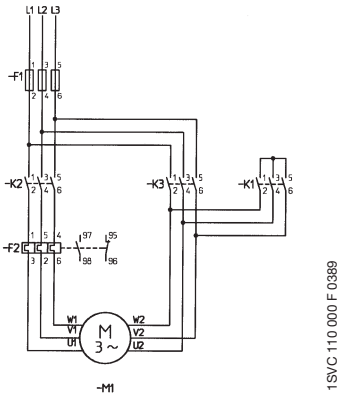

Version:
24 V, 42-48 V AC/DC,
110-240 V AC




Version:
380-415 V AC




Control circuit diagram



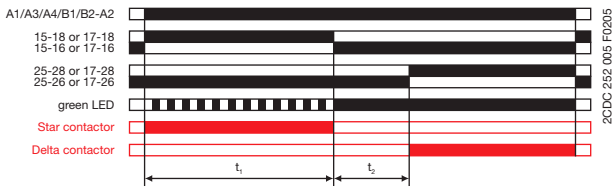

Power circuit diagram

### Star-delta change-over with impulse
### CT-YDEW, CT-MFS, CT-MBS, CT-MVS

The CT-YDEW and the function of the multifunction timer CT-MFS, CT-MBS, CT-MVS respectively, is designed especially for star-delta starting of squirrel cage motors. It uses two separate timing circuits: a variable timing circuit for the starting time in star-mode, and a fixed timing circuit with 50 ms for the transition from the star to the delta contactor. The first output relay is energized after the supply voltage is applied to the terminals **A1/A3/A4/B1/B2-A2**.

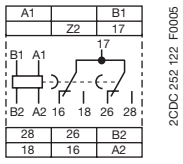
After the star time has elapsed, the first output is de-energized and the second timer with 50 ms starts. After this timer has elapsed, the second output relay is energized and stays energized until the supply is disconnected.

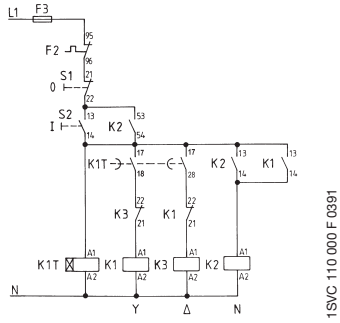
Timing is displayed by the flashing green LED.




$t_1$ = adjustable starting time
$t_2$ = transition time (approx. 50 ms)

Example CT-YDAV



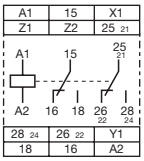




Control circuit diagram

# Electronic timers
# CT-S range
## Connection diagrams

### Connection diagrams, positions of connecting terminals

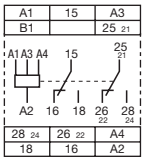
#### CT-MFS




Device:
1SVR 430 010 R0200

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

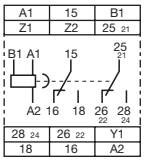
#### CT-MVS




Device:
1SVR 430 023 R0200

A1-A2 Supply: 110-240 V AC
A3-A2 Supply: 24 V AC/DC
A4-A2 Supply: 42-48 V AC/DC
A1/A3/A4-B1
Control contact to start timing
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

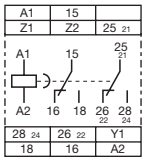
#### CT-MBS




Device:
1SVR 430 012 R0200

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
Z1-Z2 Remote potentiometer
Y1-Z2 Control contact to start timing
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

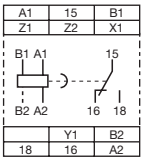
#### CT-MBS




Devices:
1SVR 430 010 R1200
1SVR 430 011 R2200

A1-A2 Supply: 12-40 V AC or 12-60 V DC or 380-440 V AC
Z1-Z2 Remote potentiometer
Y1-Z2 Control contact to start timing
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

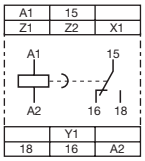
#### CT-MBS




Device:
1SVR 430 013 R0100

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer
Y1-Z2 Control contact to start timing
X1-Z2 Control contact to pause timing
15-16/18 c/o contact

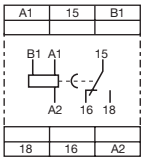
#### CT-MBS




Devices:
1SVR 430 010 R1100
1SVR 430 011 R2100

A1-A2 Supply: 12-40 V AC or 12-60 V DC or 380-440 V AC
Z1-Z2 Remote potentiometer
Y1-Z2 Control contact to start timing
X1-Z2 Control contact to pause timing
15-16/18 c/o contact

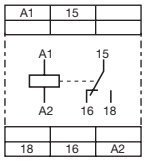
#### CT-ERS




Device:
1SVR 430 102 R0100

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

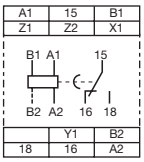
#### CT-ERS




Devices:
1SVR 430 100 R1100
1SVR 430 101 R2100

A1-A2 Supply: 12-40 V AC or 12-60 V DC or 380-440 V AC
15-16/18 c/o contact

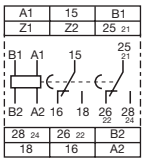
#### CT-ERS




Device:
1SVR 430 103 R0100

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer
Y1-Z2 Control contact to start timing
X1-Z2 Control contact to pause timing
15-16/18 c/o contact

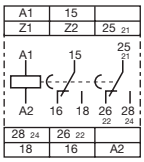
#### CT-ERS




Device:
1SVR 430 103 R0200

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

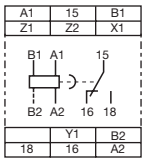
#### CT-ERS




Devices:
1SVR 430 100 R1200
1SVR 430 101 R2200

A1-A2 Supply: 12-40 V AC or 12-60 V DC or 380-440 V AC
Z1-Z2 Remote potentiometer
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

#### CT-AHS



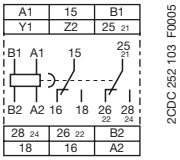

Device:
1SVR 430 113 R0100

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer
Y1-Z2 Control contact to start timing
X1-Z2 Control contact to pause timing
15-16/18 c/o contact

# Electronic timers
# CT-S range
## Connection diagrams

### Connection diagrams, positions of connecting terminals

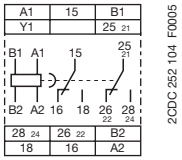
#### CT-AHS




Device:
1SVR 430 113 R0200

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Y1-Z2 Control contact to start timing
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

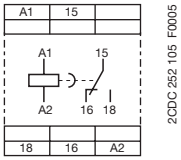
#### CT-APS




Device:
1SVR 430 183 R0300

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
A1/B1/B2-Y1 Control contact to start timing
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

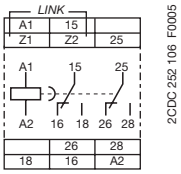
#### CT-ARS




Device:
1SVR 430 120 R0100

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

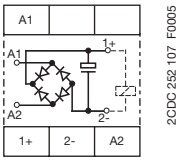
#### CT-ARS




Device:
1SVR 430 120 R0300

A1-A2 Supply: 24-240 V AC/DC
Z1-Z2 Remote potentiometer
15-16/18 1. c/o contact
25-26/28 2. c/o contact

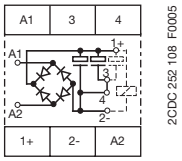
#### CT-VBS




Device:
1SVR 430 261 R6000

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

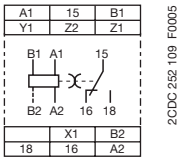
#### CT-VBS




Device:
1SVR 430 261 R5000

A1-A2 Supply: 200-240 V DC
1+ - 2- Contactor coil
3-4 Jumper for setting the time delay

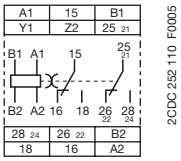
#### CT-EAS




Device:
1SVR 430 173 R0100

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer
Y1-Z2 Control contact to start timing
X1-Z2 Control contact to pause timing
15-16/18 c/o contact

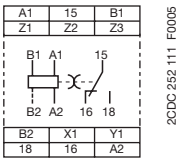
#### CT-EAS




Device:
1SVR 430 173 R0200

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Y1-Z2 Control contact to start timing
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

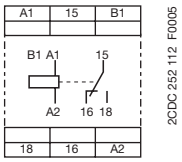
#### CT-EVS




Device:
1SVR 430 193 R0100

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer (ON-delayed)
Z3-Z2 Remote potentiometer (OFF-delayed)
Y1-Z2 Control contact to start timing
X1-Z2 Control contact to pause timing
15-16/18 c/o contact

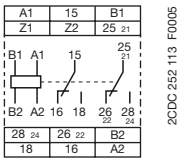
#### CT-VWS




Device:
1SVR 430 132 R0100

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

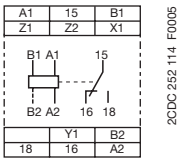
#### CT-VWS




Device:
1SVR 430 133 R0200

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

#### CT-AWS



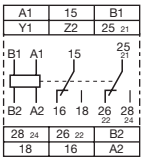

Device:
1SVR 430 143 R0100

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer
Y1-Z2 Control contact to start timing
X1-Z2 Control contact to pause timing
15-16/18 c/o contact

# Electronic timers
# CT-S range
## Connection diagrams

### Connection diagrams, positions of connecting terminals

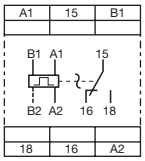
#### 1 CT-AWS




Device:
1SVR 430 143 R0200

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Y1-Z2 Control contact to start timing
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

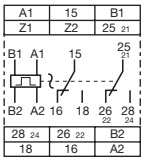
#### CT-EBS




Device:
1SVR 430 152 R0100

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

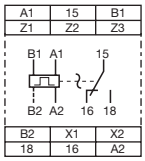
#### CT-EBS




Device:
1SVR 430 153 R0200

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer
15-16/18 1. c/o contact
25-26/28 2. c/o contact
21-22/24 2. c/o contact as instantaneous contact

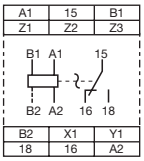
#### CT-TGS




Device:
1SVR 430 163 R0100

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer (OFF time)
Z3-Z2 Remote potentiometer (ON time)
X1-Z2 Control contact to start timing
X2-Z2 Control contact to change-over starting with ON / OFF
15-16/18 c/o contact

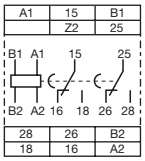
#### CT-PGS




Device:
1SVR 430 253 R0100

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z1-Z2 Remote potentiometer (off period)
Z3-Z2 Remote potentiometer (pulse time)
Y1-Z2 Control contact to start timing
X1-Z2 Control contact to pause timing
15-16/18 c/o contact

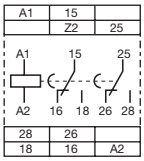
#### CT-YDAV




Device:
1SVR 430 203 R0200

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z2 no function
15-16/18 1. c/o contact
25-26/28 2. c/o contact

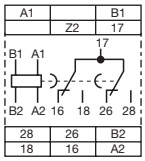
#### CT-YDAV




Device:
1SVR 430 201 R2300

A1-A2 Supply: 380-440 V AC
Z2 no function
15-16/18 1. c/o contact
25-26/28 2. c/o contact

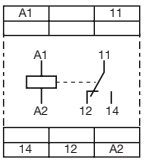
#### 1 CT-YDEW




Device:
1SVR 430 213 R0200

A1-A2 Supply: 110-240 V AC
B1-A2 Supply: 24 V AC/DC
B2-A2 Supply: 42-48 V AC/DC
Z2 no function
17-16/18 1. c/o contact OFF-delayed
17-26/28 2. c/o contact ON-delayed

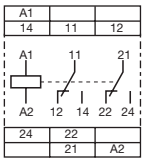
#### CT-IRS




Devices:
1SVR 430 220 R9100
1SVR 430 220 R8100
1SVR 430 221 R7100

A1-A2 Supply: 110-240 V AC or 24 V AC/DC or 42-48 V AC/DC
11-12/14 c/o contact

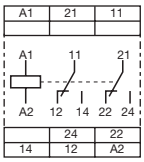
#### CT-IRS




Devices:
1SVR 430 220 R9300
1SVR 430 220 R8300
1SVR 430 221 R7300

A1-A2 Supply: 110-240 V AC or 24 V AC/DC or 42-48 V AC/DC
11-12/14 1. c/o contact
21-22/24 2. c/o contact

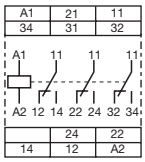
#### CT-IRS




Devices with gold contacts:
1SVR 430 230 R9300
1SVR 430 231 R7300

A1-A2 Supply: 110-240 V AC or 24 V AC/DC
11-12/14 1. c/o contact
21-22/24 2. c/o contact

#### CT-IRS




Devices:
1SVR 430 220 R9400
1SVR 430 220 R8400
1SVR 430 221 R1400

A1-A2 Supply: 220-240 V AC or 24 V AC/DC or 42-48 V AC/DC
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



| Type | | Terminals used | CT-S range | | | | |
|---|---|---|---|---|---|---|---|
| **Input circuits** | | | | | | | |
| Supply voltage - power consumption | | **A1-A2** | 24-240 V AC/DC | approx. 2-2.5 VA/W[1] | | | |
| | | **A1-A2** | 12-40 V AC | approx. 0.6-1.8 VA | | | |
| | | **A1-A2** | 12-60 V DC | approx. 0.6-2.5 W | | | |
| | | **A3/B1-A2** | 24 V AC/DC | approx. 0.5 VA/W | | | |
| | | **A4/B2-A2** | 42-48 V AC/DC | approx. 1.8 VA/W | | | |
| | | **A1-A2** | 100-127 V DC | max. 120 mA | (CT-VBS) | | |
| | | **A1-A2** | 200-240 V DC | max. 70 mA | (CT-VBS) | | |
| | | **A1-A2** | 110-240 V AC | approx. 2-3 VA[2] / ca. 2.5-12 VA | | | |
| | | **A1-A2** | 380-440 V AC | approx. 3 VA | | | |
| Supply voltage tolerance | | | -15...+10 % | | | | |
| Supply voltage frequency | | AC/DC versions | DC or 50/60 Hz | | | | |
| | | AC versions | 50/60 Hz | | | | |
| Control contact connections[3] | volt-free (dry) | **Y1-Z2** | start timing external | | | | |
| | | **X1-Z2** | time pause, time storage | | | | |
| | | **X2-Z2** | change-over starting with ON / starting with OFF | | | | |
| | voltage-related | **A1/A3/A4/B1/B2-Y1** | start timing external (CT-MVS, CT-APS) | | | | |
| Control voltage of control inputs (voltage-related) | | | Supply voltage (CT-MVS, CT-APS) | | | | |
| Minimum control pulse length | | | 20 ms | | | | |
| Non-load voltage at the control contacts (volt-free) | | | 10-40 V DC (no galvanic separation to supply circuit) | | | | |
| Max. current in the control circuit | | | 1 mA | | | | |
| Max. cable length to the control inputs | | | 50 m | | | | |
| Remote potentiometer connection | | **Z1/Z3-Z2** | 50 kΩ | | | | |
| Max. cable length to remote potentiometer | | | 2 x 25 m, shield connected to Z2 potential | | | | |
| Duty time | | | 100 % | | | | |
| **Timing circuit** | | | | | | | |
| Time ranges | 10 time ranges: 0.05 s - 300 h | | 1.) 0.05-1 s<br>6.) 15-300 s | 2.) 0.15-3 s<br>7.) 1.5-30 min | 3.) 0.5-10 s<br>8.) 15-300 min | 4.) 1.5-30 s<br>9.) 1.5-30 h | 5.) 5-100 s<br>10.) 15-300 h |
| | 7 time ranges: 0.05 s -10 min (CT-ARS) | | 1.) 0.05-1 s<br>6.) 15-300 s | 2.) 0.15-3 s<br>7.) 0.5-10 min | 3.) 0.5-10 s | 4.) 1.5-30 s | 5.) 5-100 s |
| | depend on load (CT-VBS) | | see delay time diagrams | | | | |
| Recovery time | | | < 50 ms | | | | |
| Repeat accuracy (constant parameters) | | | < 0.2 % | (CT-VBS: ±5 %) | | | |
| Minimum duty time | | | 80 ms (CT-ARS) | | | | |
| Timing error within the supply voltage tolerance range | | | < 0.008 % / % Δ U | (CT-VBS: ± 10%) | | | |
| Timing error within temperature range | | | < 0.07 % / °C | (CT-VBS: 0.2 %/°C) | | | |
| **Indication of operational states** | | | | | | | |
| Supply voltage / timer | | | green LED steady / flashing while timing | | | | |
| 1st / 2nd output relay energized | | | red LED / red LED | | | | |
| **Output circuits** | **15-16/18, 25(21)-26(22)/28(24)** | | | | | | |
| Number of contacts | | | Relays, 1 or 2 c/o contacts,2nd c/o contact selectable as instantaneous contact (except CT-ARS, CT-VBS, CT-YDEW, CT-YDAV, CT-IRS) | | | | |
| Contact material | | | AgCdO | | | | |
| Rated voltage | acc. to VDE 0110, IEC 60947-1 | | 250 V (CT-VBS: see delay time diagrams) | | | | |
| Maximum switching voltage | | | 250 V AC, 250 V DC | | | | |
| Rated switching current acc. to IEC 60947-5-1 | AC-12 (resistive) | 230 V | 4 A | | | | |
| | AC-15 (inductive) | 230 V | 3 A | | | | |
| | DC-12 (resistive) | 24 V | 4 A | | | | |
| | DC-13 (inductive) | 24 V | 2 A | | | | |
| Maximum lifetime | | mechanical | 30 x $10^6$ switching cycles | | | | |
| | | electrical (AC-12, 230 V, 4 A) | 0.1 x $10^6$ switching cycles | | | | |
| Short circuit proof, max. fuse rating | | n/c | 10 A fast, operating class gL | | | | |
| | | n/o | 10 A fast, operating class gL | | | | |

[1] CT-ARS: 24 V AC/DC - approx. 1 A for 30 ms, 18 V AC/DC - ca. 1 A for 20 ms, 110-130 V AC - ca. 1 A for 15 ms, 220-240 V AC - ca. 1 A for 10 ms
[2] CT-MBS 1 c/o, CT-MBS 2 c/o, CT-ERS 1 c/o, CT-EVS, CT-APS, CT-EBS 1 c/o

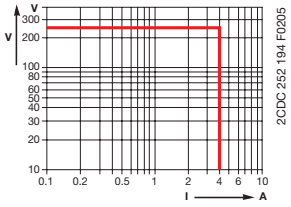
• [3] **Connection diagrams** ..... 42 • [3] **Wiring notes** ..... 47

# Electronic relays
# CT-S range
## Technical data, Load limit curves

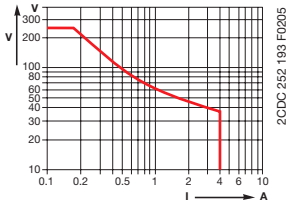
| | | CT-S range |
|---|---|---|
| **General data** | | |
| Width of enclosure | | 22.5 mm |
| Wire size | stranded wire with wire end ferrule | 2 x 0,75-2,5 mm² (18-14 AWG) |
| | rigid | 2 x 0,5-4 mm² (20-12 AWG) |
| Torque | | 0.8 Nm |
| Weight | | approx. 150 g (5.3 oz) |
| Mounting position | | any |
| Degree of protection enclosure / terminals | | IP50 / IP20 |
| Operating temperature | | -20...+60 °C |
| Storage temperature | | -40...+85 °C |
| Mounting | | DIN rail (EN 50022) |
| **Standards** | | |
| Product standard | | IEC 61812-1, EN 61812-1 |
| EMC Directive | | 89/336/EEC |
| Electromagnetic compatibility | acc. to EN 61000-6-2, EN 61000-6-4 | |
| ESD | acc. to IEC 61000-4-2, EN 61000-4-2 | level 3 6 kV / 8kV |
| HF radiation resistance | acc. to IEC 61000-4-3, EN 61000-4-3 | level 3 10 V/m |
| Burst | acc. to IEC 61000-4-4, EN 61000-4-4 | level 3 2 kV / 5 kHz |
| Surge | acc. to IEC 1000-4-5, EN 61000-4-5 | level 4 2 kV L-L |
| HF line emission | acc. to IEC 1000-4-6, EN 61000-4-6 | level 3 10 V |
| Low Voltage Directive | | 73/23/EEC |
| Operational reliability | acc. to IEC 68-2-6 | 4 g |
| Mechanical resistance | acc. to IEC 68-2-6 | 6 g |
| **Approvals / marks** | | **see table of approvals and marks** |
| **Isolation data** | | |
| Rated insulation voltage between supply circuit, control circuit and output circuit | acc. to VDE 0110, IEC 60947-1 | supply up to 240 V: 300 V<br>supply up to 440 V: 500 V |
| Rated impulse withstand voltage between all isolated circuits | acc. to VDE 0110, IEC 664 | 4 kV / 1.2-50 µs |
| Test voltage between all isolated circuits | | 2.5 kV, 50 Hz, 1 min., (CT-ARS: 2 kV, 50 Hz, 1 min.) |
| Pollution category | acc. to VDE 0110, IEC 664, IEC 255-5 | III/C |
| Overvoltage category | acc. to VDE 0110, IEC 664, IEC 255-5 | III/C |
| Environmental testing | acc. to IEC 68-2-30 | 24 h cycle time, 55 °C, 93 % rel., 96 h |

## Load limit curves

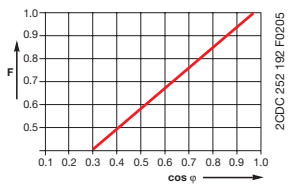
AC load (resistive)



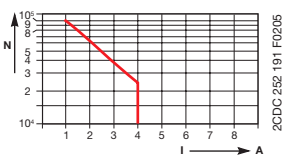

DC load (resistive)




Derating factor F for inductive AC load




Contact lifetime /switching cycles N

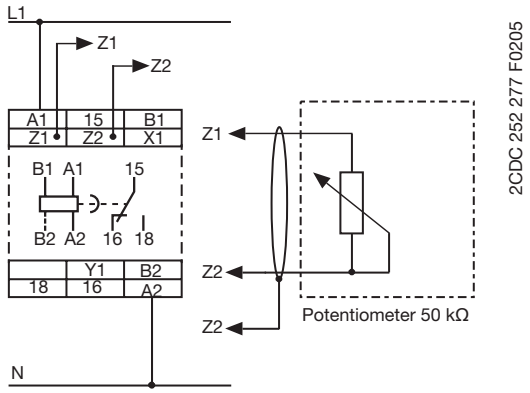



220 V 50 Hz 1 AC
360 cycles/h

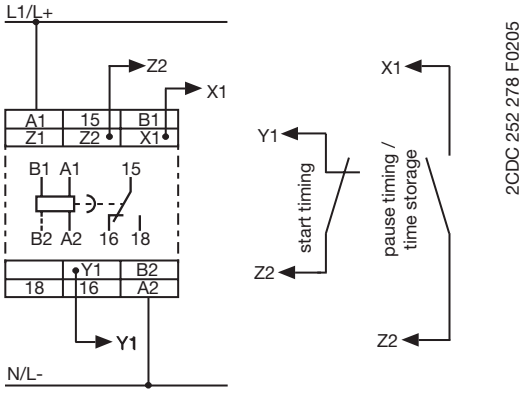
# Electronic relays
# CT-S range
## Wiring notes, Dimensional drawing

## Wiring notes

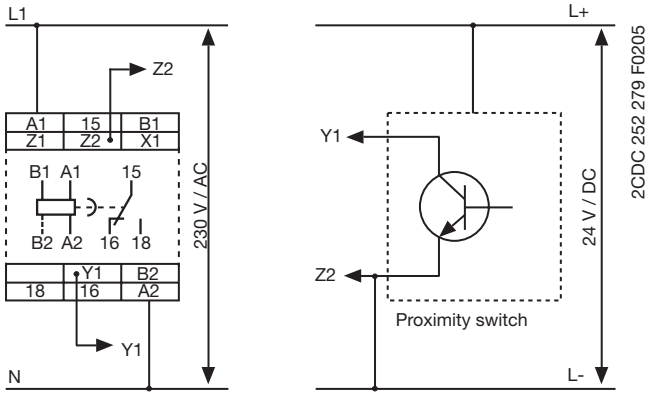
Connection diagram for remote potentiometer



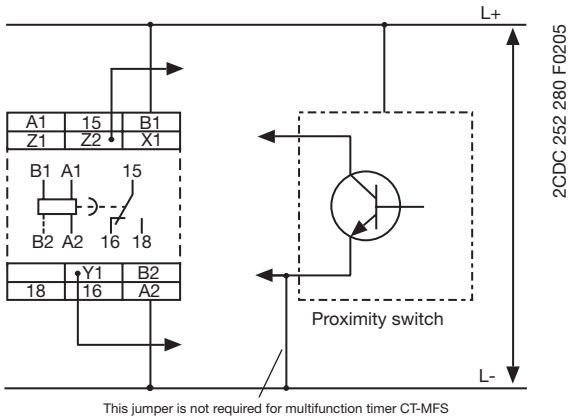

Connection diagram for control contacts




Connection diagram for proximity switch (3 wire) with 230 V AC supply

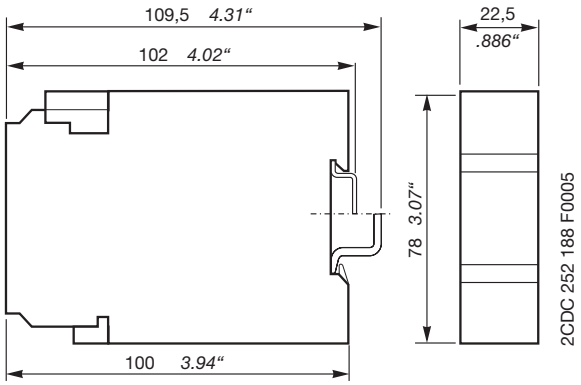



Connection diagram for proximity switch (3 wire) with 24 V DC supply




## Dimensional drawing

Dimensions in mm



# Notes