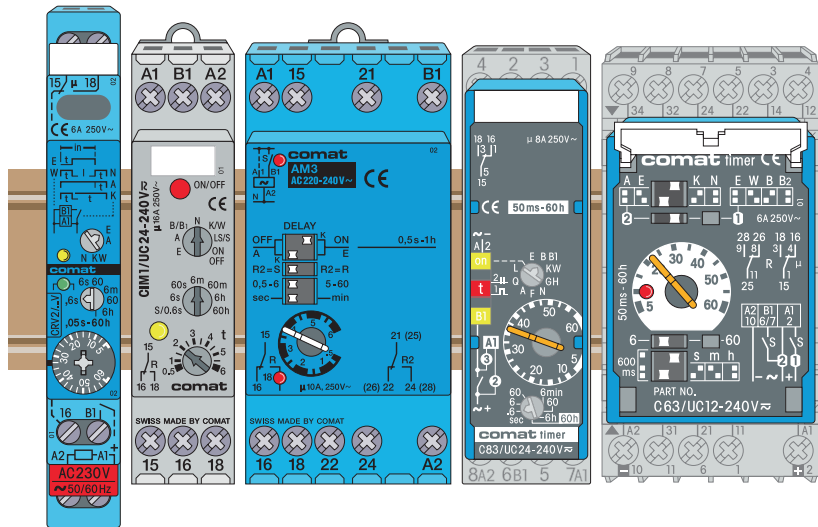


Time Relays



Delay functions

E On delay

 S \Rightarrow R on with delay
 S OFF \Rightarrow R off

A Off delay

 S \Rightarrow R on
 S OFF \Rightarrow R off with delay

F On and off delay

 S \Rightarrow R on with delay (t1)
 S OFF \Rightarrow R off with delay (t2)

Shot timing modes

W On shot leading edge

 S \Rightarrow R on for t
 S OFF \Rightarrow R off
 (pulse clipping)

N On shot trailing edge

 S OFF \Rightarrow R on for t
 S on for t \Rightarrow R off

Q On shot leading and trailing edge

 S \Rightarrow R on for t1
 S OFF \Rightarrow R on for t2
 S OFF off for t1 \Rightarrow R off

Puls shaping

K Puls shaping

 S (pulse or continuous contact)
 \Rightarrow R on for t
 S... no influence on R and t

L Pulse shaping, retrigger (subsequ.time operation from 0)

 S (pulse or continuous contact)
 \Rightarrow R on for t
 S on for t = tRESET

M Puls shaping

 S OFF \Rightarrow R on for t
 S... no influence on R and t

Blinker functions

B Blinker, pulse start

 S \Rightarrow R on/off periodically according to t
 S OFF \Rightarrow R off

B1 Blinker, pulse start, trailing pulse

 S \Rightarrow R on/off periodically according to t
 S OFF: last pulse = t

B2 Blinker, interval start

 S \Rightarrow R after t on/off periodically according to t
 S OFF \Rightarrow R off

Delayed pulse

G On delay single shot

 S (pulse or continuous contact)
 \Rightarrow R after t1 on for t2
 S... no influence on R and t

H On delay single shot

 S \Rightarrow R after t1 on for t2
 S OFF \Rightarrow R off

Repeat cycle timer

I Repeat cycle timer, pulse start

 S \Rightarrow R on/off periodically according to t1 and t2
 S OFF \Rightarrow R off

P Repeat cycle timer, interval start **C55, CT1: t2/t1**

 S \Rightarrow R after t1 (t2) on/off periodically according to t2 and t1
 S OFF \Rightarrow R off

Special functions

Y Star-delta timer

 S \Rightarrow R on for t
 R OFF \Rightarrow R on with delay for t-delta
 S OFF \Rightarrow R off

X1 Restart delay

 S \Rightarrow R on
 S OFF \Rightarrow R off and starts t
 S \Rightarrow R restart only after t

Special functions

S Step-on / Step-off switch

 S \Rightarrow R on/off

LS Step-switching (staircase lighting timer), with time lapse

 S \Rightarrow R on and starts t
 S on for t \Rightarrow R off

Stop/Reset

tSTOP SSTOP interrupts t (t-addition) **T** t is stopped \Rightarrow R on/off

tRESET SRESET reset t t restarts immediately **T** Test

S = Triggering
 R = Output circuit
 \Rightarrow = switches...

Pulse sequence monitoring

U
 S1/S2
 P (tp)
 tA tV R

V
 S1/S2
 P (tp)
 tA tV R

S1/S2 = Monitoring start
 P = Pulse sequence
 tp = Pulse separation

\leq : Pulse separation is **smaller** than the time tp Start with S1 = **without** start-up short-out tA tV = settable alarm delay (tA = tV)
 $>$: Pulse separation is **larger** than the time tp Start with S2 = start-up short-out tA

2.1 Time Cubes

Timecube



Type

CT2/CT3

The CT2 or CT3 Timecube is an electronic timer that is inserted between the plug-in industrial relay and the socket.

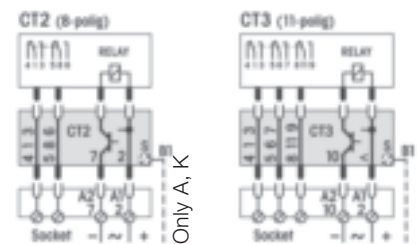
The result is a modular, complete time-delay relay without additional space requirement. The CT modules are suitable for all 8- and 11-pin standard industrial relays according to IEC 67 (i.e. C2, C3 series) and for industrial relays from other manufacturers.



Specifications

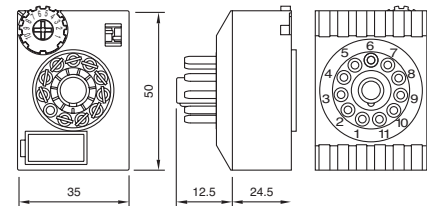
Operating voltage	9,5 ... 275 V, see list
Ambient temperature operation/storage	-25 ... + 60 °C/-40 ... 70 °C
Housing material	Polycarbonate or similar (UL94V-1)
Protection class (DIN 40050)	IP40
Weight	35 g
Time range	0.2 s ... 30 min., 4 sections
Min. control period	50 ms
Reset time	< 200 ms
Fine time adjustment	Potentiometer 1:15
Time range setting	

Diagram



Range	DIP switch	Time
0,2 - 3 s		Adjusting knob 1 ... 10
2 - 30 s		
0,2 - 3 min		
2 - 30 min		

Dimensions [mm]



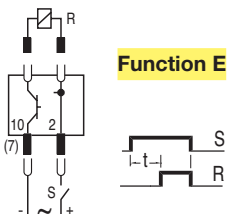
Only 11-pin version shown. The dimension of the 8-pin version are identical

Technical approvals, conformities



CT2-E (8-pin), CT3-E (11-pin)

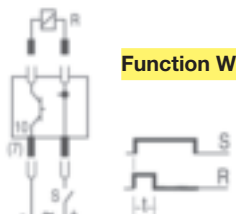
On delay
Function E



CT2-E30/S	9,5 ... 18 V	DC
CT2-E30/L	20 ... 65 V	UC
CT2-E30/H	90 ... 265 V	UC
CT3-E30/S	9,5 ... 18 V	DC
CT3-E30/L	20 ... 65 V	UC
CT3-E30/H	90 ... 265 V	UC

CT2-W (8-pin), CT3-W (11-pin)

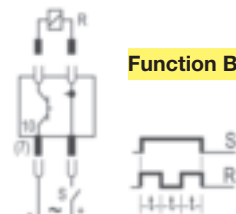
One shot
Function W



CT2-W30/S	9,5 ... 18 V	DC
CT2-W30/L	20 ... 65 V	UC
CT2-W30/H	90 ... 265 V	UC
CT3-W30/S	9,5 ... 18 V	DC
CT3-W30/L	20 ... 65 V	UC
CT3-W30/H	90 ... 265 V	UC

CT2-B (8-pin), CT3-B (11-pin)

Blinker
Function B



CT2-B30/S	9,5 ... 18 V	DC
CT2-B30/L	20 ... 65 V	UC
CT2-B30/H	90 ... 265 V	UC
CT3-B30/S	9,5 ... 18 V	DC
CT3-B30/L	20 ... 65 V	UC
CT3-B30/H	90 ... 265 V	UC

Note: The relay has to be selected according to the actual power supply voltage.

Timecube
CT2, CT3

8- and 11-pin Timecube®

Type

CT2/CT3

The CT2 or CT3 Timecube is an electronic timer that is inserted between the plug-in industrial relay and the socket.

The result is a modular, complete time-delay relay without additional space requirement.

The CT modules are suitable for all 8- and 11-pin standard industrial relays according to IEC 67 (i.e. C2, C3 series) and for industrial relays from other manufacturers.

Specifications

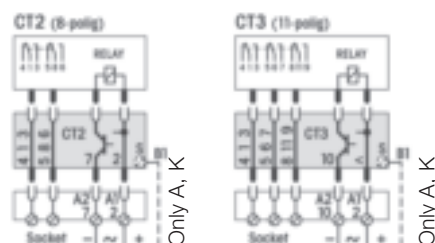
Operating voltage	9,5 ... 275 V, see list
Ambient temperature operation/storage	-25 ... +60 °C/-40 ... 70 °C
Housing material	Polycarbonate or similar (UL94V-1)
Protection class (DIN 40050)	IP40
Weight	35 g
Time range	0.2 s ... 30 min., 4 sections
Min. control period	50 ms
Reset time	< 200 ms
Fine time adjustment	Potentiometer 1:15
Time range setting	



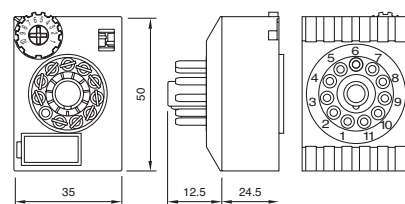
Time Relays 2.1

2

Diagram



Dimensions [mm]



Only 11-pin version shown.
The dimension of the 8-pin version are identical

Technical approvals, conformities

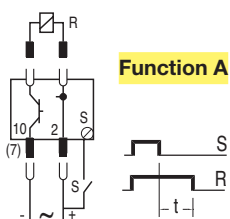


Range	DIP switch	Time
0,2 - 3 s		Adjusting knob 1 ... 10
2 - 30 s		
0,2 - 3 min		
2 - 30 min		

CT2-A (8-pin), CT3-A (11-pin)

Switch-off delay

Function A



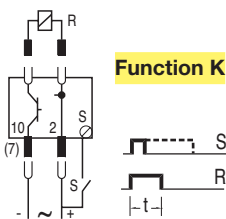
CT2-A30/S	9,5 ... 18 V	DC
CT2-A30/L	20 ... 65 V	UC
CT2-A30/M	90 ... 150 V	UC
CT2-A30/U	180 ... 265 V	UC

CT3-A30/S	9,5 ... 18 V	DC
CT3-A30/L	20 ... 65 V	UC
CT3-A30/M	90 ... 150 V	UC
CT3-A30/U	180 ... 265 V	UC

CT2-K (8-pin), CT3-K (11-pin)

Impulse-on

Function K



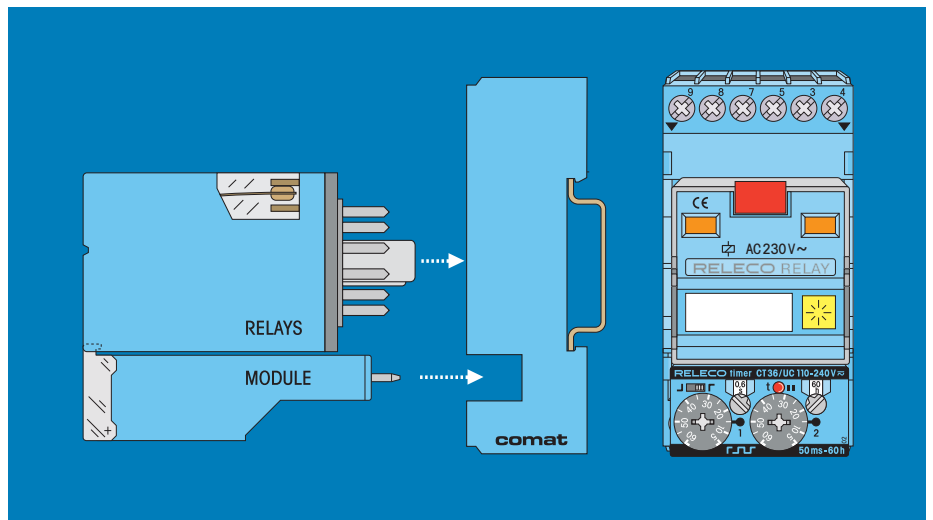
CT2-K30/S	9,5 ... 18 V	DC
CT2-K30/L	20 ... 65 V	UC
CT2-K30/M	90 ... 150 V	UC
CT2-K30/U	180 ... 265 V	UC

CT3-K30/S	9,5 ... 18 V	DC
CT3-K30/L	20 ... 65 V	UC
CT3-K30/M	90 ... 150 V	UC
CT3-K30/U	180 ... 265 V	UC

Note: The relay has to be selected according to the actual power supply voltage.

2.2 Time Modules

Modular plug-in Time Delay Relays



The modular timer system consists of individual plug-in timer modules with front cover, an 11-pole plug-in relay and a system socket with retaining spring.

The individual combination allows an optimal device selection for the foreseen application.

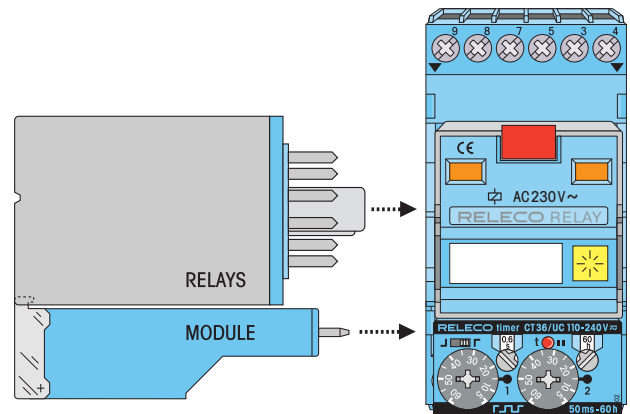
Later modifications as for example an exchange of relay from mechanical contacts to a relay with solid-state outputs are possible at any time. The user profits of a universal system of worldwide unique flexibility.

The modular Comat timer CT System

The time delay relays and monitoring relays consist of plug-in CT electronic modules and 11-pole output relays. Both system components can be combined in a variety of combinations. This allows adapting the system for the specific application.

Subsequent modifications, for example a change from mechanical contacts to solid-state outputs, are possible at any time just by replacing the relay.

This system provides the user a complete universal system with worldwide unmatched flexibility.



The system sockets C12B0 or C-155 serve as a basis for the secure reception of the electronic modules. The sockets have a 4-pole module slot in which the CT modules lock firmly and vibration proof also without the output relay. Contact is made with reliable twin knife contacts.

With the A2 connector bridge "C-A2", the neutral conductor (N/-) can be connected from socket to socket. It reduces wiring work considerably.

Robust terminals for wires up to 4 mm² and spacious labeling are other advantages of this practical Comat modular system.

Clear markings close to the terminal connections on the sockets make it easy to identify the connections for wiring and servicing.

The CT modules are proof of the practical oriented experiences of Comat in the field of industrial electronics. All control and display elements are arranged easy accessible at all times on the front side of the modules. The functions and settings are self-explanatory schematically illustrated on the front and allow to review the set values also during operation.

A transparent cover over the module setting components provides protection from unintentional settings and additionally links the module to the output relay.

Triggering is performed with the operating voltage. (L1 or +). No potential-free contacts are therefore required. The triggering complies to machine standards. Parallel connection to B1 is admissible.

The wide UC voltage range (AC/DC) of the modules give a wide flexibility. It permits the connection to AC or DC supplies and provides a high level of reliability in triggering.

Note: In case of even wider voltage ranges, for example UC 24-240V, triggering currents on B1 are often in the range of 100µA with simultaneous low threshold voltages of less than 20V. Due to capacitive or inductive pickups this may lead to unintentional triggering or switching errors caused by insufficient load on the control contacts (It is not seldom that 50V or more can be measured in open lines).

The output relays show the connection diagram and the technical values on the front side, (exception C3 and C5 relays). A color code indicates an AC coil with red and a DC coil with blue color. Most of the relays have a lockable test button for manual operation.

The standard contacts have proven its reliability for high switching current applications over many years. The contact material AgNi permits a wide switching range and due to the large dimensioning they are designed for a high number of switching cycles. The high breaking capacity of up to 10A/400V and a low load switching capability of 12V/10mA makes the contact suitable for the use in main circuits as well as for low voltage applications.

The twin contacts are switching the load circuit with 2 independent contact tongues. The switching safety for low currents is therefore 100 times higher compared to a single contact relay. Despite the high switching capacity of up to 6A/250V, these contacts are very suitable to switch low currents and voltages up to 1mA/6V.

The solid-state relays are an alternative to mechanical relays. In the standard version, the relay has a potential-free universal semiconductor output for AC or DC loads. The advantage is a bouncing- and wear-free, overload resistant, short circuit protected output with a practical unlimited life cycle.

Solid-state relays are specially recommended for applications of high switching cycles, for example for repeat cycle timers, flushing lights, but also for high inductive switching loads of solenoid valves, couplings, motors, etc. The solid state relays are also suitable for capacitive loads, for example long power lines, or compensated lighting circuits.

Additional protection circuits of the output or of the load are not necessary in any application for this type of Comat relays.

The solid-state relays are insensitive in any aggressive environment such as chemical plants, sewage plants etc. and are therefore an excellent choice for the employment in such environments.



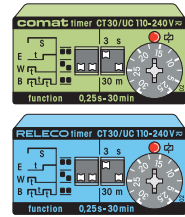
The train symbol indicates products available in a special railway execution according to EN 50155. Please refer to our special railway brochure for details.

CT30, CT32, CT33, CT36

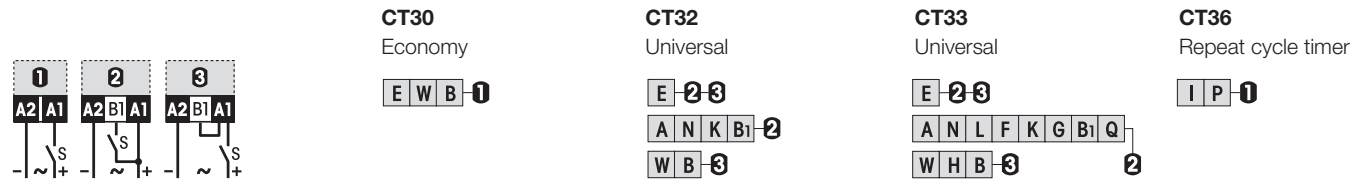
Plug-in time modules (combined with industrial relays)

Type Blue: CT30, CT32, CT33, CT36, /...V R
Green: CT30, CT32, CT33, CT36, /...V

Plug-in time modules for sockets with module slot in combination with 11p plug-in relays.
Power supply and control voltages 24 ... 240 V. Time ranges 30 ms up to 60 h.
LED output state indicator.



Time functions and related connection diagrams (Function diagrams: refer to page 114)



Time data

Type	CT 30	CT 32	CT33	CT36
Partial time ranges, t_{max}	3, 30 /s /min	1.5, 6, 15, 60 /s /min	150, 600 ms	2 x 600 ms
Min. time t_{min}	0.25 s	0.15 s	1.5, 6, 15, 60 /s /min /h	2 x 6, 60 /s /min /h
Fine adj. range $t_{min} \dots t_{max}$	2.5 ... 30	1 ... 10	30 ms	2 x 50 ms
Time range tolerance t_{min}	-25 ... 0 %	-25 ... 0 %	0.2 ... 1	2 x 5 ... 60
t_{max}	0 ... 35 %	0 ... 25 %	-25 ... 0 %	-25 ... 0 %
Repetition accuracy	± 0.2 % or 20 ms	± 0.2 % or 20 ms	0 ... 25 %	0 ... 25 %
Temperature drift of time	0.25 % / K	± 0.1 % / K	± 0.2 % or 20 ms	± 0.2 % or 20 ms
Min. trigger pulse width B1	-	≥ 30 ms	0.1 % / K	0.1 % / K
Reset time pow. supply	≤ 200 ms	≤ 150 ms	≥ 30 ms	-
Power failure security	≥ 20 ms	≥ 20 ms	≤ 150 ms	≤ 150 ms
			≥ 20 ms	≥ 20 ms

Output data

Nominal voltage	UC 24 – 48 V	110 – 240, 115, 230 V
Type	Solid state	Solid state
Rated operational current	150 mA	50 mA
On-state resistance	$\leq 25 \Omega$	$\leq 100 \Omega$
Leakage current	$\leq 150 \mu A$	$\leq 150 \mu A$

Power supply and control input (UC = AC / DC)

Type	CT 30	CT 32	CT33	CT36
Nominal voltage	UC 24 – 48 V	UC 110 – 240 V	UC 24 – 48 V	UC 110 – 240 V
Operating voltage range	19 ... 75 V	90 ... 265 V	19...60 V	82 ... 265 V
Supply current	3 ... 5 mA	2 ... 4 mA	6 ... 12 mA	4 ... 8 mA
Type	CT32, CT33	CT32, CT33	CT32, CT33	
Nominal voltage	UC 24 – 48 V	UC 115 V	UC 230 V	
Operating voltage range	19 ... 60 V	90 ... 150 V	180 ... 265 V	
Input B1 inactive	≤ 9 V	≤ 60 V	≤ 100 V	
Supply current	5 ... 11 mA	4 ... 7 mA	1 ... 4 mA	

General Specification

Ambient temperature storage /operation	-40 ... 85 °C / -25 ... 60 °C
Ingress Protection degree	IP 40 when plugged in
Housing material	Lexan
Weight	25 g

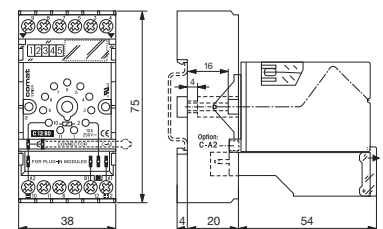
Standard types

	Blue	Green
CT30, CT32, CT33, CT36, UC24-48	CT3x/UC24-48V R	CT3x/UC24-48V
CT30, CT36, UC110-240	CT3x/UC110-240V R	CT3x/UC110-240V
CT32, CT33, UC115	CT3x/UC115V R	CT3x/UC115V
CT32, CT33, UC230	CT3x/UC230V R	CT3x/UC230V

Remark:

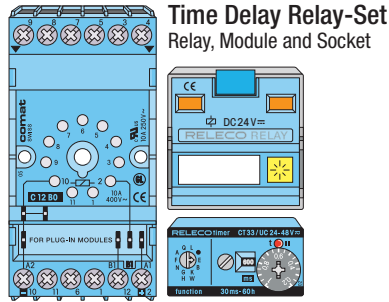
This module is part of several ready for connection units consisting of socket, relay and module. A wide range of suitable relays are available.

Dimensions [mm]



Technical approvals, conformities



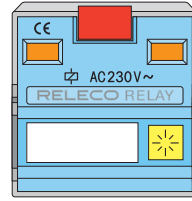
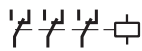


Time Delay Relay-Set
Relay, Module and Socket

Relay data's see:
Section Industrial Relays



Power Relay

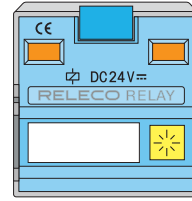
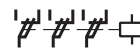


C3-A30X

Universal
Power Relay 10A.
With 3 power changeover-contacts
this is the robust relay for AC and
DC circuits ranging from
10mA 10V.

10A~
10mA 10V

Control Relay

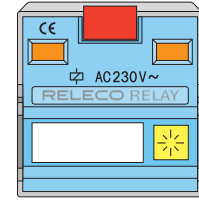


C3-T31X

Relay with 3 twin contacts 6A
The control relay with highest
switching reliability for control
and signal circuits ranging from
5mA 5V.

6A 250V~
5mA 5V

Signal Relay

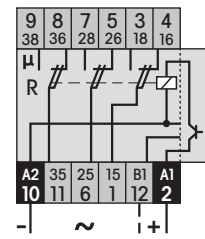
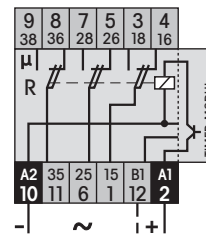
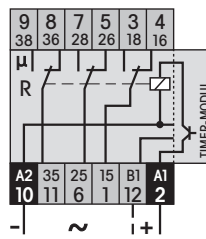
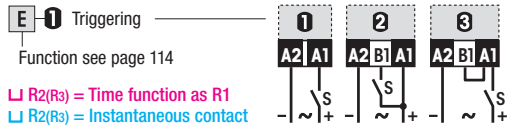


C3-T32X

Relay with 3 twin contacts, 10µ gold flush
The twin contact relay with high-
est switching reliability for signal
circuits ranging from 1mA 5V.
Recommend. upto 0,2A 30V.

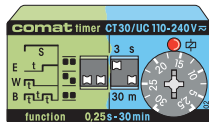
6A 250V~
1mA 5V

Timer-Modul (Function diagrams: refer to page 114)



CT30 Economy timer

3 functions, voltage controlled,
output LED.
Seismic approved.



Function / Triggering



Time range

0,25s-30min
0,25-3s...
2,5-30min

Set Order-Nr.:

CT30.3-A30/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

Delivery includes:
• Relay C3-A30X/...V
• Module CT30/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

Set Order-Nr.:

CT30.3-T31/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

Delivery includes:
• Relay C3-T31X/...V
• Module CT30/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

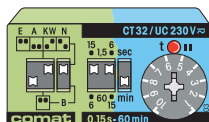
Set Order-Nr.:

CT30.3-T32/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

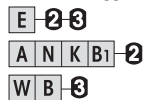
Delivery includes:
• Relay C3-T32X/...V
• Modul CT30/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

CT32 Universal timer

7 functions, voltage controlled, time
lapse display, blinking.
Seismic approved.



Function / Triggering



Time range

0,15s-60min
0,15-1,5s...
6-60min

Set Order-Nr.:

CT32.3-A30/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

Delivery includes:
• Relay C3-A30X/...V
• Module CT32/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

Set Order-Nr.:

CT32.3-T31/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

Delivery includes:
• Relay C3-T31X/...V
• Module CT32/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

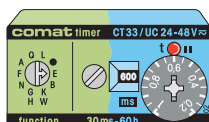
Set Order-Nr.:

CT32.3-T32/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

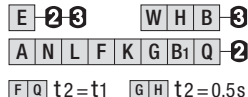
Delivery includes:
• Relay C3-T32X/...V
• Module CT32/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

CT33 Universal timer

12 functions, voltage controlled, time
lapse display, blinking, high setting
accuracy by dial graduation 1:5.



Function / Triggering



Time range

30ms-60h
30-150ms...
12-60h

Set Order-Nr.:

CT33.3-A30/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

Delivery includes:
• Relay C3-A30X/...V
• Module CT33/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

Set Order-Nr.:

CT33.3-T31/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

Delivery includes:
• Relay C3-T31X/...V
• Module CT33/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

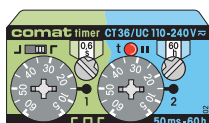
Set Order-Nr.:

CT33.3-T32/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

Delivery includes:
• Relay C3-T32X/...V
• Module CT33/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

CT36 Repeat cycle timer

Pulse or pause start.
t1/t2 separately settable.
Time lapse display t1/t2.



Function / Triggering



Time range

2x50ms-60h
2x 50-600ms...
5-60h

Set Order-Nr.:

CT36.3-A30/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

Delivery includes:
• Relay C3-A30X/...V
• Module CT36/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

Set Order-Nr.:

CT36.3-T31/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

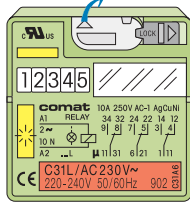
Delivery includes:
• Relay C3-T31X/...V
• Module CT36/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

Set Order-Nr.:

CT36.3-T32/...V R
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V

Delivery includes:
• Relay C3-T32X/...V
• Module CT36/...V R
• Front cover FS-R
• Socket C12B0 R
• Retaining clip S3-C

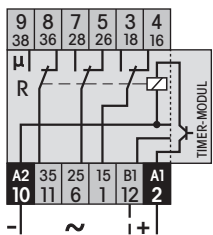
Power Relay



C31L

Universal Power Relay 10A
with 3 power changeover-contacts
this is the robust relay for AC and
DC circuits ranging from
50mA 10V.

10 A 250V~
50mA 10V



Set Order-Nr.:

CT30.31/...V

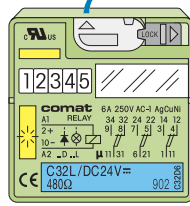
AC 24, 48, 115, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C31L/...V
- Module CT30/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

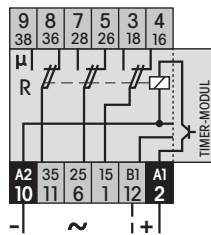
Control Relay



C32L

Relay with 3 twin contacts 6A
The control relay with highest
switching reliability for control
and signal circuits ranging from
10mA 5V.

6 A 250V~
10mA 5V



Set Order-Nr.:

CT30.32/...V

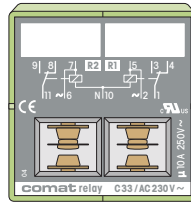
AC 24, 48, 115, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C32L/...V
- Module CT30/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

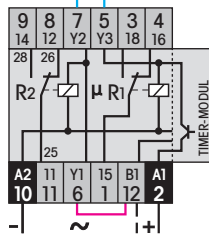
Power Relay



C33

Double-channel Power Relay 10A
With 2x1 power changeover-
contacts this is a robust relay for
AC and DC circuits ranging from
10mA 12V.

10 A 250V~
10mA 12V



Set Order-Nr.:

CT30.33/...V

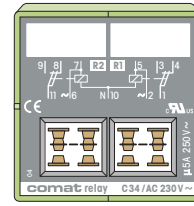
AC 24, 48, 115, 230V

DC 24, 48, 110V

Delivery includes:

- Relay C33/...V
- Module CT30/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

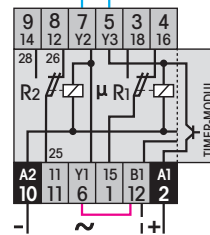
Control Relay



C34

Double-channel Control Relay 5A
With 2x1 changeover-contact.
The control relay with increased
switching reliability for control and
signal circuits from 1mA 6V.

5 A 250V~
1mA 6V



Set Order-Nr.:

CT30.34/...V

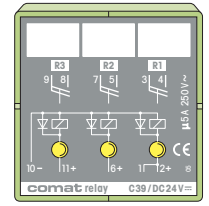
AC 24, 48, 115, 230V

DC 24, 48, 110V

Delivery includes:

- Relay C34/...V
- Module CT30/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

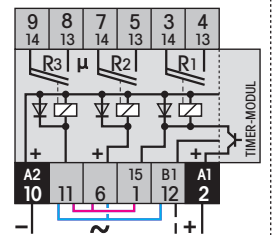
Power- and Signal Relay



C39

Triple-channel Twin Contact Relay 5A
with 3x1 NO contact. Ideal for
interface applications ranging from
1mA 100mV.
LED display for each channel.

5 A 250V~
1mA 100mV



Set Order-Nr.:

CT30.39/...V

--

DC 24, 48V

Delivery includes:

- Relay C39/...V
- Module CT30/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT32.31/...V

AC 24, 48, 115, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C31L/...V
- Module CT32/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT32.32/...V

AC 24, 48, 115, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C32L/...V
- Module CT32/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT32.33/...V

AC 24, 48, 115, 230V

DC 24, 48, 110V

Delivery includes:

- Relay C33/...V
- Module CT32/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT32.34/...V

AC 24, 48, 115, 230V

DC 24, 48, 110V

Delivery includes:

- Relay C34/...V
- Module CT32/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT32.39/...V

--

DC 24, 48V

Delivery includes:

- Relay C39/...V
- Module CT32/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT33.31/...V

AC 24, 48, 115, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C31L/...V
- Module CT33/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT33.32/...V

AC 24, 48, 115, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C32L/...V
- Module CT33/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT33.33/...V

AC 24, 48, 115, 230V

DC 24, 48, 110V

Delivery includes:

- Relay C33/...V
- Module CT33/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT33.34/...V

AC 24, 48, 115, 230V

DC 24, 48, 110V

Delivery includes:

- Relay C34/...V
- Module CT33/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT33.39/...V

--

DC 24, 48V

Delivery includes:

- Relay C39/...V
- Module CT33/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT36.31/...V

AC 24, 48, 115, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C31L/...V
- Modul CT36/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT36.32/...V

AC 24, 48, 115, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C32L/...V
- Module CT36/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT36.33/...V

AC 24, 48, 115, 230V

DC 24, 48, 110V

Delivery includes:

- Relay C33/...V
- Module CT36/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT36.34/...V

AC 24, 48, 115, 230V

DC 24, 48, 110V

Delivery includes:

- Relay C34/...V
- Module CT36/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

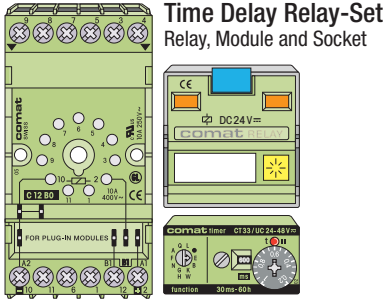
CT36.39/...V

--

DC 24, 48V

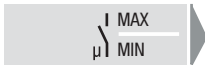
Delivery includes:

- Relay C39/...V
- Module CT36/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

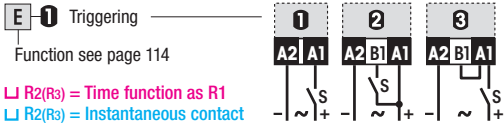


Time Delay Relay-Set
Relay, Module and Socket

Relay data's see:
Section Industrial Relays

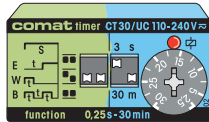


Timer-Modul (Function diagrams: refer to page 114)



CT30 Economy timer

3 functions, voltage controlled, output LED. Seismic approved.



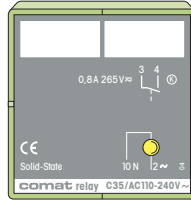
Function / Triggering



Time range

0,25s-30min
0,25-3s...
2,5-30min

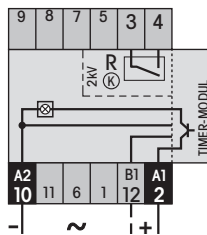
UC Solid-State Relay



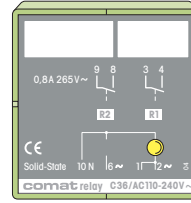
C35

Universal Solid-State Relay for AC or DC load
Highest switching frequency for virtually limitless life cycle due to solid-state operation. No external protective wiring required.

0,8A 10...265V~
1mA 10V



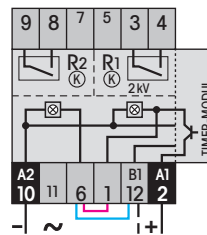
AC Solid-State Relay



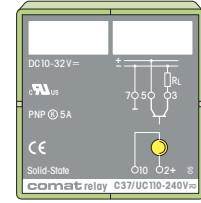
C36

AC SS double-channel
Triac output, crossover switch. Built-in RC wiring protection. Specially designed for frequent switching cycles and inductive loads. Minimum load: 30mA

0,8A 20...265V~
30mA 20V



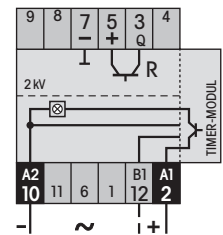
DC Solid-State Relay



C37

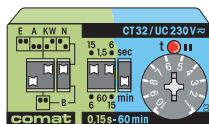
DC SS single-channel
Bounce- and wearing- free for DC loads(inductive/capacitive). Short-circuit/overload proof. No external wiring protection required.

5A 10...32V=
1mA 10V

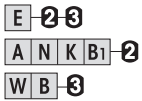


CT32 Universal timer

7 functions, voltage controlled, time lapse display, blinking. Seismic approved.



Function / Triggering



Time range

0,15s-60min
0,15-1,5s...
6-60min

Set Order-Nr.:

CT30.35/...V
AC 110-240V
UC 24-48V

Delivery includes:
• Relay C35/...V
• Module CT30/...V
• Front cover FS-C
• Socket C12B0
• Retaining clip HF-32

Set Order-Nr.:

CT30.36/...V
AC 110-240V
UC 24V

Delivery includes:
• Relay C36/...V
• Module CT30/...V
• Front cover FS-C
• Socket C12B0
• Retaining clip HF-32

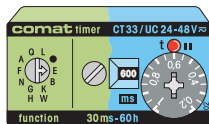
Set Order-Nr.:

CT30.37/...V
UC 110-240V
UC 24-48V

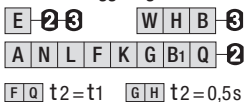
Delivery includes:
• Relay C37/...V
• Module CT30/...V
• Front cover FS-C
• Socket C12B0
• Retaining clip HF-32

CT33 Universal timer

12 functions, voltage controlled, time lapse display, blinking, high setting accuracy by dial graduation 1:5.



Function / Triggering



Time range

30ms-60h
30-150ms...
12-60h

Set Order-Nr.:

CT32.35/...V
AC 115, 230V
UC 24-48V

Delivery includes:
• Relay C35/...V
• Module CT32/...V
• Front cover FS-C
• Socket C12B0
• Retaining clip HF-32

Set Order-Nr.:

CT32.36/...V
AC 115, 230V
UC 24V

Delivery includes:
• Relay C36/...V
• Module CT32/...V
• Front cover FS-C
• Socket C12B0
• Retaining clip HF-32

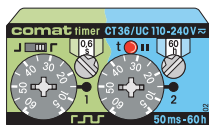
Set Order-Nr.:

CT32.37/...V
UC 115, 230V
UC 24-48V

Delivery includes:
• Relay C37/...V
• Module CT32/...V
• Front cover FS-C
• Socket C12B0
• Retaining clip HF-32

CT36 Repeat cycle timer

Pulse or pause start. t1/t2 separately settable. Time lapse display t1/t2.



Function / Triggering



Time range

2x50ms-60h
2x 50-600ms...
5-60h

Delivery includes:

CT36.35/...V
AC 110-240V
UC 24-48V

Delivery includes:
• Relay C35/...V
• Module CT36/...V
• Front cover FS-C
• Socket C12B0
• Retaining clip HF-32

Set Order-Nr.:

CT36.36/...V
AC 110-240V
UC 24V

Delivery includes:
• Relay C36/...V
• Module CT36/...V
• Front cover FS-C
• Socket C12B0
• Retaining clip HF-32

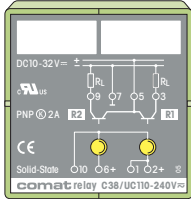
Delivery includes:

CT36.37/...V
UC 110-240V
UC 24-48V

Delivery includes:
• Relay C37/...V
• Module CT36/...V
• Front cover FS-C
• Socket C12B0
• Retaining clip HF-32

DC Solid-State Relay

2x

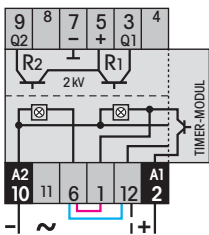


C38

DC SS Relay double-channel
Bounce- and wearing- free for DC loads (inductive/capacitive). Short-circuit/overload proof. No external wiring protection required. 2A constant current per channel.

2A 10...32V=

1mA 10V



Set Order-Nr.:

CT30.38/...V

UC 110-240V

UC 24-48V

Delivery includes:

- Relay C38/...V
- Module CT30/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT32.38/...V

UC 115, 230V

UC 24-48V

Delivery includes:

- Relay C38/...V
- Module CT32/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT33.38/...V

UC 115, 230V

UC 24-48V

Delivery includes:

- Relay C38/...V
- Module CT33/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT36.38/...V

UC 110-240V

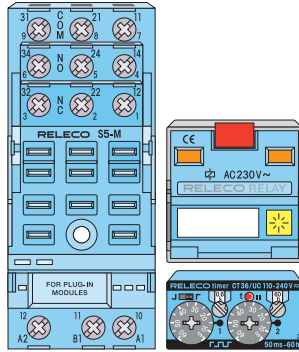
UC 24-48V

Delivery includes:

- Relay C38/...V
- Modul eCT36/...V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

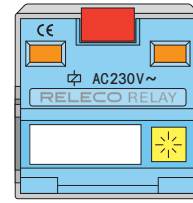


Time Delay Relay-Set Relay, Module and Socket



High Power Relay DC

16A 400V~

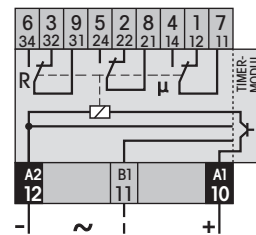


C5-A30X

Universal Power Relay 16A
With 3 power changeover-contacts this is the robust relay for AC and DC circuits ranging from 10mA 10V.

16A 400V~

10mA 10V



Set Order-Nr.:

CT30.5-A30/...V R

AC 24, 115, 230V

DC 24, 110, 220V

Delivery includes:

- Relay C5-A30X/...V
- Module CT30/...V R
- Front cover FS-C5
- Socket S-5M
- Retaining clip S3-C

Set Order-Nr.:

CT32.5-A30/...V R

AC 24, 115, 230V

DC 24, 110, 220V

Delivery includes:

- Relay C5-A30X/...V
- Module CT32/...V R
- Front cover FS-C5
- Socket S-5M
- Retaining clip S3-C

Set Order-Nr.:

CT33.5-A30/...V R

AC 24, 115, 230V

DC 24, 110, 220V

Delivery includes:

- Relay C5-A30X/...V
- Module CT33/...V R
- Front cover FS-C5
- Socket S-5M
- Retaining clip S3-C

Set Order-Nr.:

CT36.5-A30/...V R

AC 24, 115, 230V

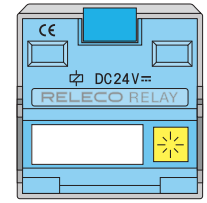
DC 24, 110, 220V

Delivery includes:

- Relay C5-A30X/...V
- Module CT36/...V R
- Front cover FS-C5
- Socket S-5M
- Retaining clip S3-C

High Power Relay DC

10A @ 220V=

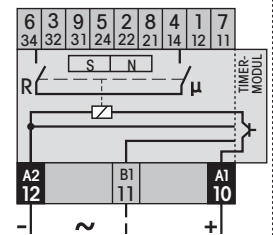


C5-M10X

Highpower Relay, in particular for DC loads upto 10A 220V= (DC1)
With 2 NO contacts in series and a blow magnet for safe arc extinguishing.

16A 400V~

10mA 10V



Set Order-Nr.:

CT30.5-M10/...V R

AC 24, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C5-M10X/...V
- Module CT30/...V R
- Front cover FS-C5
- Socket S-5M
- Retaining clip S3-C

Set Order-Nr.:

CT32.5-M10/...V R

AC 24, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C5-M10X/...V
- Module CT32/...V R
- Front cover FS-C5
- Socket S-5M
- Retaining clip S3-C

Set Order-Nr.:

CT33.5-M10/...V R

AC 24, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C5-M10X/...V
- Module CT33/...V R
- Front cover FS-C5
- Socket S-5M
- Retaining clip S3-C

Set Order-Nr.:

CT36.5-M10/...V R

AC 24, 230V

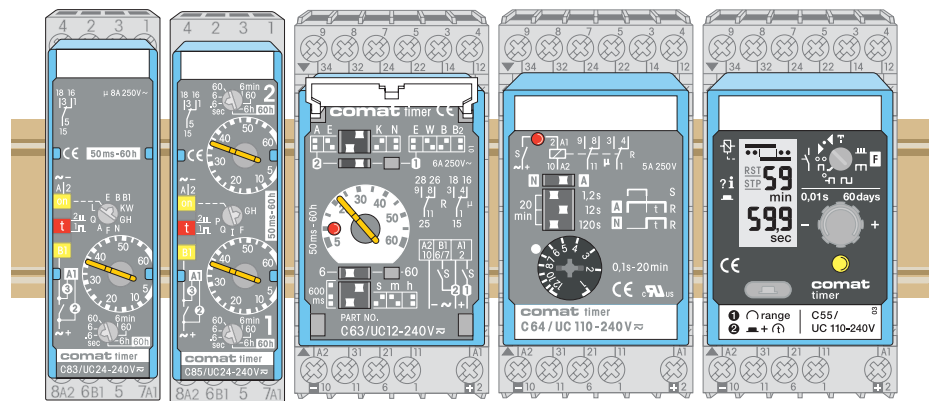
DC 24, 48, 110, 220V

Delivery includes:

- Relay C5-M10X/...V
- Modul CT36/...V R
- Front cover FS-C5
- Socket S-5M
- Retaining clip S3-C

2.3 Plug-in Time Relays

Plug-in Time Relays



Application	Types	Functions*	Min. time	Max. time	contact rating	Socket
12 Time functions, ON switch	C83	E, W, H, B, A, N L, F, K, B1, G, Q	50 ms	60 h	8 A / 250 V	S7-C
Time relay without auxiliary voltage, 1xNO & 1x NC contacts	C84	A, N	0.1 s	20 min.	5 A / 250 V	S7-C
Double and repeat cycle timer	C85	I, P, F, Q, G, H	2 x 50 ms	2 x 60 h	8 A / 250 V	S7-C
Multi function timer with 2 CO contacts	C63	E, W, B, B2, A, K, N	50 ms	60 h	6 A / 250 V	S3-xx
Time Universal relay without auxiliary voltage, 2 CO contacts	C64	A, N	0.1 s	50 min	5 A / 250 V	S3-xx
Multifunction timer with 15 functions and digital display, including pulse sequence monitoring	C55	E, W, H, B, I, P, A K, N, M, G, F, Q, U, V	0.01 s	60 day	5 A / 250 V	S3-xx
Multifunction timer with 15 functions and digital display, including pulse sequence monitoring, solid state output	C55.x	E, W, H, B, I, P, A K, N, M, G, F, Q, U, V	0.01 s	60 day	5 A / 250 V	S3-xx
Multifunction timer with 15 functions and digital display, including pulse sequence monitoring, potential free triggering, 2 CO contacts	C56	E, W, H, B, I, P, A K, N, M, G, F, Q, U, V	0.01 s	60 day	5 A / 250 V	S3-xx
Economy time and blinking relay	CS1	E, W, B, B2	50 ms	60 min	8 A / 250 V	S3-xx
Economy time and blinking relay with external potentiometer option	CS2	E, W, B, B2, A, K, N	50 ms	60 h	8 A / 250 V	S3-xx
Universal timer with 2 CO contacts	CS3	E, W, B, B2, A, K, N	50 ms	60 h	6 A / 250 V	S3-xx

*(Function diagrams: refer to page 114)

Multifunction time relay with mechanical change over output contact
12 time functions + test function "ON", 50 ms ... 60 h

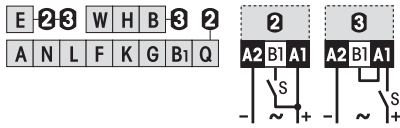
Type: C83/UC24-240V R

Plug-in multifunction time relay, 1 change over power contact, 12 time functions, time ranges: 50 ms ... 60 h, 3 LED's for full state indication: Control input, time run and output, **Seismic qualification** available (precondition for use in nuclear power plants)

Maximum contact load	8 A / 250 V AC-1 240 W DC-1
Recommended minimum contact load	10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)

The functions are selectable by rotary switch



LED function table:

Function circuit	State	LED function
Output, yellow LED	active	continuous ON
	passive	OFF
Time run, red LED	active	t1: Double blinking t2: Blinking
	passive	OFF
B1 input, yellow LED	active	continuous ON
	passive	OFF

Time data

7 partial time ranges, t_{max} (rotary switch)	0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}, 0.5 \dots 6$
Time range tolerance	$t_{min}: -30 \% \dots +0 \% / t_{max}: -0 \% \dots +25 \%$
Repetition accuracy	$\pm 0.1 \%$ or DC: 5 ms / AC: 25 ms
Response time, power on, on A1	≤ 40 ms
Min. trigger pulse on B1	30 ms
Reset time B1 (AC/DC)	≤ 50 ms
Power failure security (50 / 60 Hz)	≥ 15 ms

Contacts

Type	1CO, Single contact micro disconnection
Material	AgNi
Rated operational current	8 A
Max. inrush current (10 ms)	30 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	2000 VA
Max. DC load DC-1, 30 V / 250 V (Fig.2)	240 W / 75 W

Power supply and control input (UC = AC / DC)

Nominal voltage (A1, B1)	UC 24 – 240 V
Operating voltage range [V]	20 ... 265, 60 Hz: ... 200 V
Power consumption [W]	≤ 1.8
Frequency range [Hz]	45 ... 63
Allowed residual current into B1 [mA]	AC: ≤ 0.8 ; DC: ≤ 1
Trigger threshold voltage on B1, AC / DC [V]	$V_{threshold} = V_{supp} \times m + b; m = 0,35; b = 7,5$

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

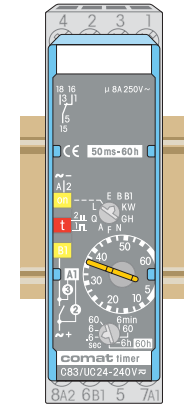
General Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -25 ... 60 °C
Mechanical life of contact	30 x 10 ⁶ operations
Expected life @ 25 °C (except contact)	>> 50 000 h
Ingress protection degree	IP 40 when plugged in
Housing material / Weight	Lexan / approx. 60 g

Standard types

UC (AC/DC) 45...63 Hz	C83/UC24-240V R
Seismic qualification:	C83.C2292/UC24-240V R

Accessories: Socket: **S7-C**



Connection diagram

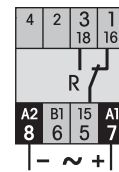


Fig.1 AC electrical endurance

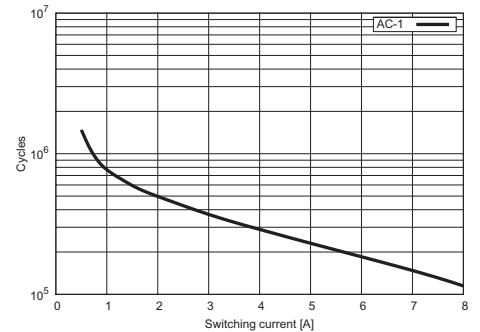
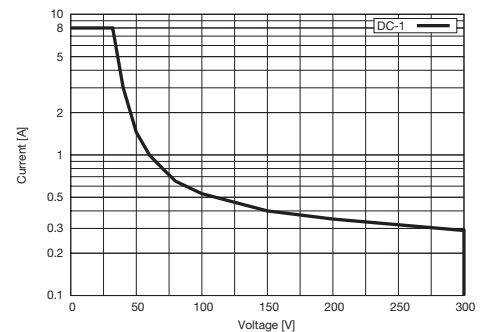
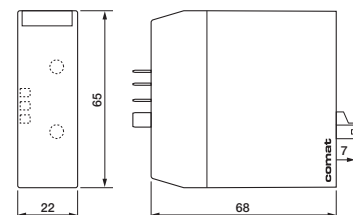


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

Available:
Seismic IEEE 323, IEEE 344

EN 60947



C84

Time relay, time run without supply voltage, with mechanical NO, NC output contacts, 2 time functions, 0,1 s ... 20 min

Type: C84/... V R

Plug-in time relay

1 normally open + 1 normally closed contact, 250 V

UC 24 V, UC 110 ... 240 V operation voltages

2 time functions, time ranges: 0.1 s ... 20 minutes

LED for supply voltage state indication

Seismic qualification available (precondition for use in nuclear power plants)

Maximum contact load 5 A / 250 V AC-1 5 A / 30 V DC-1

Recommended minimum contact load 1 mA / 0.1 V

Time functions and related connection diagram (Function diagrams: refer to page 114)



Time data

4 partial time ranges, t_{max} (rotary switch)	1.2 s / 12 s / 120 s / 20 minutes
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 1 ... 12
Time range tolerance	t_{min} : -25 % ... +5 % / t_{max} : -5 % ... +25 %
Repetition accuracy	± 1 %
Min. start impulse on A1	≥ 150 ms
Reset time	≥ 100 ms
Power failure security	5 ... 10 ms

Contacts

Type	1 NO, 1 NC, micro disconnection
Material	Gold flash over silver alloy
Rated operational current	5 A
Max. switching voltage AC-1	250 V
Max. switching voltage DC-1	125 V
Max. AC load (Fig.1) AC-1	1250 VA
Max. DC load 30 V / 125 V (Fig.2)	150 W / 25 W

Control input (UC = AC / DC)

	UC 24 ... 48 V	UC 110 ... 240 V
Nominal voltage (A1)	20 ... 60	88 ... 265
Operating voltage range [V]	20 ... 60	88 ... 265
Input current [mA]	3 ... 10	1 ... 5
Inrush current (100 ms) [mA]	200	100
Frequency range [Hz]	45 ... 63	45 ... 63
Threshold voltage AC / DC [V]	≥ 12 / ≥ 16	≥ 55 / ≥ 75

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between poles	2 kVrms 1 minute
Test voltage between contacts and control input	2.5 kVrms 1 minute

General Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -25 ...60 °C
Mechanical life of contacts	$\geq 50 \times 10^6$ operations
Ingress protection degree	IP 40 when plugged in
Housing material / Weight	Lexan / 50 g

Standard types

UC (AC/DC) 45...63 Hz, 24-48, 110-240

Seismic qualification:

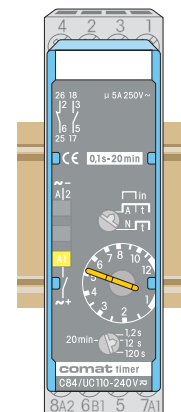
C84/UC...V R

C84.C2292/...V R

" ..." enter the voltage for full type designation

Accessories

Socket: **S7-C**



Connection diagram

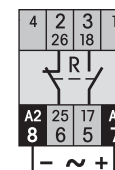


Fig.1 Contact endurance

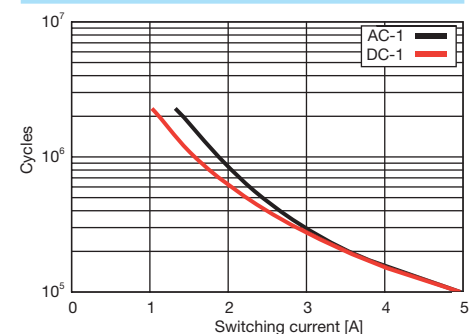
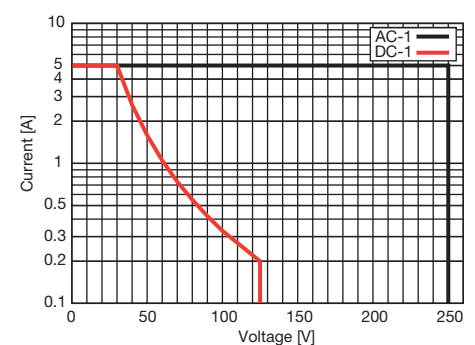
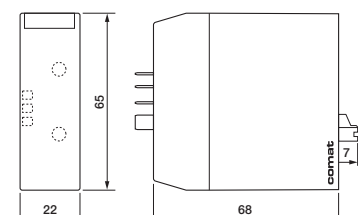


Fig. 2 Load limit curve



Dimensions [mm]



Technical approvals, conformities

Available:
Seismic IEEE 323, IEEE 344

EN 60947



Time relay and repeat cycle timer with 2 time lapses 50 ms ... 60 h, mechanical change over output contact, 6 time functions + test function "ON"

Type: C85/UC24-240 V R

Plug-in multifunction time relay / repeat cycle timer, 1 change over power contact, 6 time functions, time ranges: 2 x 50 ms ... 60 h, 3 LED's for full state indication: Control input, time run and output, **Seismic qualification** available (precondition for use in nuclear power plants)

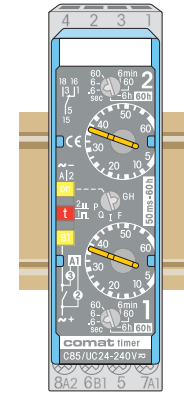
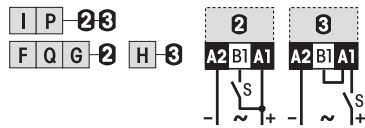
Maximum contact load	8 A / 250 V AC-1 240 W DC-1
Recommended minimum contact load	10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)

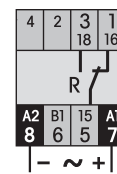
The functions are selectable by rotary switch

LED function table:

Function circuit	State	LED function
Output, yellow LED	active	continuous ON
	passive	OFF
Time run, red LED	active	t1: Double blinking t2: Blinking
	passive	OFF
B1 input, yellow LED	active	continuous ON
	passive	OFF



Connection diagram



Time data for each time t1 / t2

7 partial time ranges t_{max} (rotary switch)	0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}, 0.5 \dots 6$
Time range tolerance	$t_{min}: -30 \% \dots +0 \% / t_{max}: -0 \% \dots +25 \%$
Repetition accuracy	$\pm 0.1 \%$ or DC: 5 ms / AC: 25 ms
Response time, power on, on A1	≤ 40 ms
Min. trigger pulse on B1	30 ms
Reset time B1 (AC/DC)	≤ 50 ms
Power failure security (50 / 60 Hz)	≥ 15 ms

Contacts

Type	1CO, Single contact micro disconnection
Material	AgNi
Rated operational current	8 A
Max. inrush current (10 ms)	30 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	2000 VA
Max. DC load DC-1 30 V / 250 V (Fig.2)	240 W / 75 W

Power supply and control input (UC = AC / DC)

Nominal voltage (A1, B1)	UC 24 – 240 V
Operating voltage range [V]	20 ... 265, 60 Hz: ... 200 V
Power consumption [W]	≤ 1.8
Frequency range [Hz]	45 ... 63
Allowed residual current into B1 [mA]	AC: ≤ 0.8 ; DC: ≤ 1
Trigger threshold voltage on B1, AC / DC [V]	$V_{th} = V_{supp} \times m + b; m = 0,35; b = 7,5$ V

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

General Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -25 ... 60 °C
Mechanical life of contact	30 x 10 ⁶ operations
Expected life @ 25 °C (except contact)	$\gg 50$ 000 h
Ingress protection degree	IP 40 when plugged in
Housing material / Weight	Lexan / approx. 60 g

Standard types

UC (AC/DC) 45...63 Hz	C85/UC24-240V R
Seismic qualification:	C85.C2292/UC24-240V R

Accessories: Socket: **S7-C**

Fig.1 AC electrical endurance

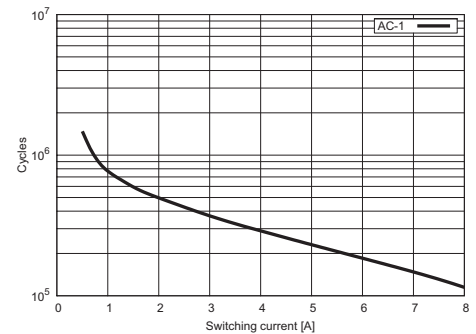
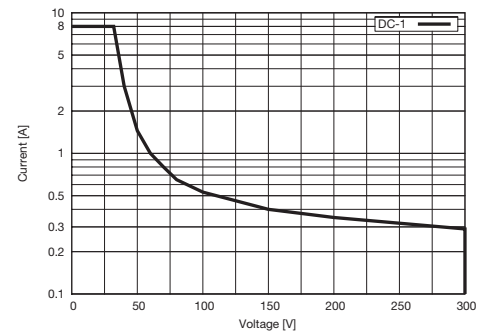
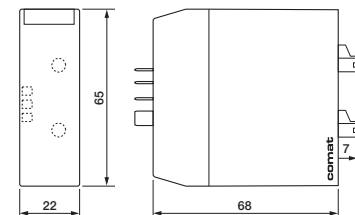


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

Available:
Seismic IEEE 323, IEEE 344

EN 60947



C63

11 pin plug-in time relay according to IEC 67-I-18a, 50 ms ... 60 h, wide band 12 ... 240 V operating voltage, 2 change over output contacts

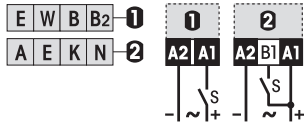


Type: C63/UC 12-240V R

Plug-in time relay
 2 change over contacts
 UC 12-240 V operating voltage
 7 time functions, time ranges: 50 ms ... 60 h
 LED for output state indication

Maximum contact load 6 A / 250 V AC-1
Recommended minimum contact load 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Time data

7 partial time ranges, t_{max} (DIP switch) 0.6, 6, 60 s / 6, 60 min / 6, 60 h
 Fine adjustment range (rotary knob) $t_{min} \dots t_{max}$, 5 ... 60
 Time range tolerance t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
 Repetition accuracy $\pm 1 \%$
 Min. trigger impulse on B1 ≥ 30 ms
 Reset time ≤ 30 ms
 Power failure security 20 ms

Contacts

Type 2 CO, micro disconnection
 Material AgNi
 Rated operational current 6 A
 Max. switching voltage AC-1 250 V
 Max. AC load AC-1 (Fig.1) 1500 VA
 Max. DC load DC-1 30 V / 250 V (Fig.2) 180 W / 60 W

Power supply- and control input (UC = AC / DC)

Nominal voltage (A1, B1) **UC 12 ... 240 V**
 Operating voltage range 19 ... 250 V
 Power consumption ≤ 1.4 W
 Frequency range 45 ... 63 Hz
 Allowed residual current into B1 AC / DC ≤ 2.3 mA / 1.2 mA
 Trigger threshold voltage on B1, AC / DC 6.5 V / 7 V

Insulation

Test voltage open contact 1 kVrms 1 minute
 Test voltage between poles 2 kVrms 1 minute
 Test voltage between contacts and control input 2 kVrms 1 minute

General Specifications

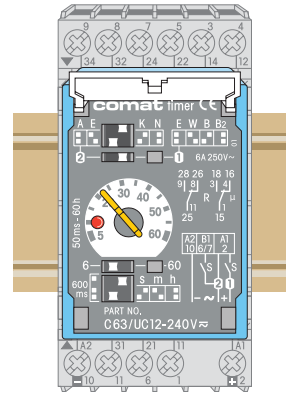
Ambient temperature storage /operation -40 ... 85 °C / -25 ... 60 °C
 Mechanical life of contacts $\geq 30 \times 10^6$ operations
 Ingress protection degree IP 40 when plugged in
 Housing material / Weight Lexan / 75 g

Standard types

UC (AC/DC) **C63/UC12-240V R**

Accessories

Socket: **S3-xx**
 Retaining clip **HF-50**
 Transparent front cover **FA-50**
 Front panel mounting set **FZ-50L** (Frame + retaining clip + socket with soldering connections)



Connection diagram

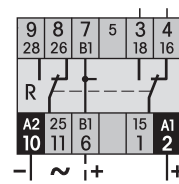


Fig.1 AC electrical endurance

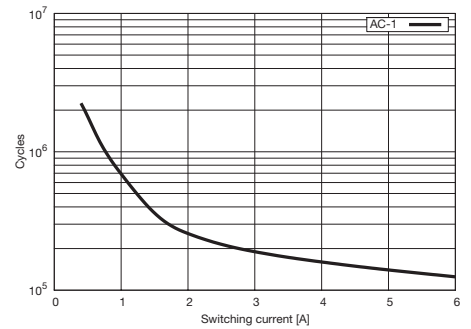
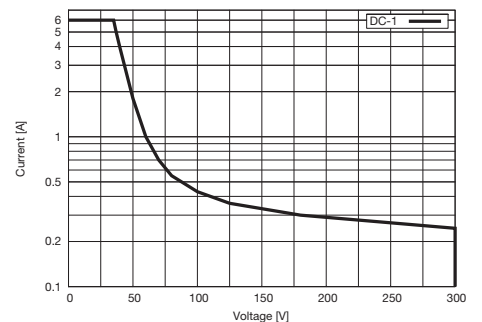
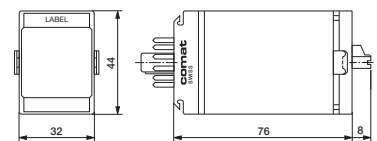


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947



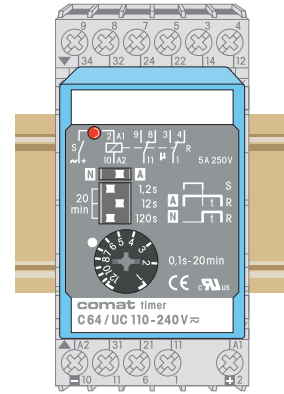
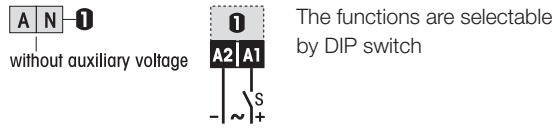
**11 pin plug-in time relay according to IEC 67-I-18a,
time run without supply voltage, 2 time functions, 2 CO output contacts**

Type: C64/... V R

Plug-in time relay, 2 change over contacts, UC 24 V, UC 110 ... 240 V operating voltages, 2 time functions, time ranges: 0.1 s ... 20 minutes, LED for supply voltage state indication, **Seismic qualification** available (precondition **for use in nuclear power plants**)

Maximum contact load	5 A / 250 V AC-1	5 A / 30 V DC-1
Recommended minimum contact load	1 mA / 0.1 V	

Time functions and related connection diagram (Function diagrams: refer to page 114)



Time data

4 partial time ranges, t_{max} (DIP switch)	1.2 s / 12 s / 120 s / 20 minutes
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 1 ... 12
Time range tolerance	t_{min} : -25 % ... +5 % / t_{max} : -5 % ... +25 %
Repetition accuracy	± 1 %
Min. start impulse on A1	≥ 150 ms
Reset time	≥ 100 ms
Power failure security	5 ... 10 ms

Contacts

Type	2 CO, micro disconnection
Material	Gold flash over silver alloy
Rated operational current	5 A
Max. switching voltage AC-1	250 V
Max. switching voltage DC-1	125 V
Max. load AC-1 (Fig.1)	1250 VA
Max. DC load DC-1 30 V / 125 V (Fig.2)	150 W / 25 W

Control input (UC = AC / DC)

	UC 24 ... 48 V	UC 110 ... 240 V
Nominal voltage (A1)	20 ... 75	88 ... 265
Operating voltage range [V]	20 ... 75	88 ... 265
Input current [mA]	3 ... 15	1 ... 5
Inrush current (100 ms) [mA]	200	100
Frequency range [Hz]	48 ... 400	45 ... 400
Threshold voltage AC / DC [V]	≥ 12 / ≥ 16	≥ 55 / ≥ 75

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between poles	2 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

General Specifications

Ambient temperature storage / operation	-40 ... 70 °C / -25 ... 60 °C
Mechanical life of contacts	≥ 50 x 10 ⁶ operations
Ingress protection degree	IP 40 when plugged in
Housing material / Weight	Lexan / 75 g

Standard types

UC (AC/DC) 48...400 Hz, 24-48, 110-240

C64/UC...V R
C64.C2292/...V R

Seismic qualification:

"..." enter the voltage for full type designation

Accessories:

Socket:	S3-xx
Retaining clip	HF-50
Transparent front cover	FA-50
Front panel mounting set	FZ-50L (Frame + retaining clip + socket with soldering connections)

Connection diagram

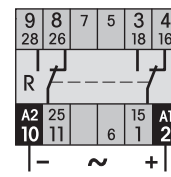


Fig.1 Contact endurance

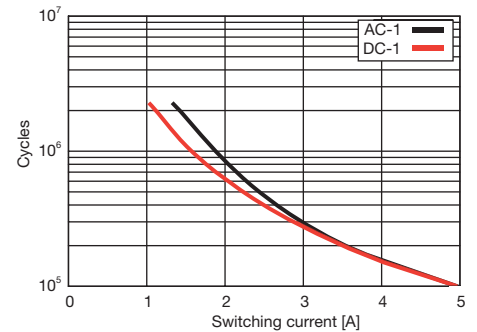
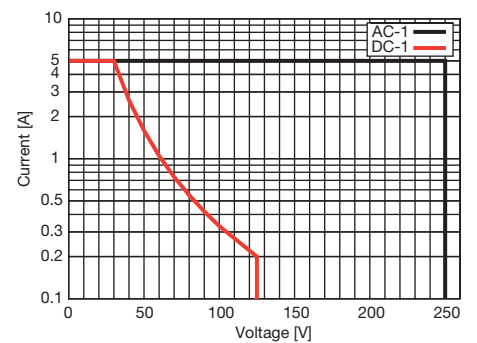
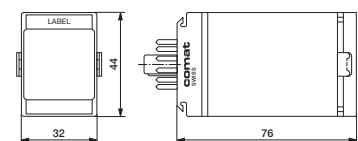


Fig. 2 Load limit curve



Dimensions [mm]



Technical approvals, conformities

Available:
Seismic IEEE 323, IEEE 344

EN 60947



C55

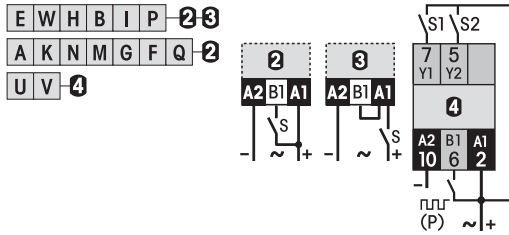
11 pin plug-in time relay according to IEC 67-I-18a, 2 change over contacts Digital quartz time relay with 15 time functions including pulse sequence monitoring. Time- Stop and Reset inputs. 10 ms ... 60 days.

Type: C55/... V R

Plug-in digital time relay, 2 change over contacts, UC 24 ... 60 V, UC 110 ... 240 V operating voltages, 15 time functions including rotational speed monitoring, or similar applications, time- STOP and RESET function inputs, Time run / function state display and interactive time setting by display, Digital setting of time until 60 days, quartz precision

Maximum contact load	5 A / 250 V AC-1 5 A / 35 V DC-1
Recommended minimum contact load	10 mA / 12 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Stop input (static):
Stops time run

Reset input (dynamic):
Sets timer to start condition, time runs again from beginning

Time data

Time ranges seconds	0.01 s ... 59.9 s	resolution 0.01s
Time ranges minutes	0.1 s ... 59 min 59.9 s	resolution 0.1 s
Time ranges hours	0.1 min ... 59 h 59.9 min	resolution 0.1 min
Time ranges days	0.1 h ... 59 day 23.9 h	resolution 0.1 h
Time accuracy, % from set value	0.05%	
Repetition accuracy	0.05% or ±10 ms	
Min. trigger pulse on B1 AC / DC	40 ms / 30 ms	
Reset time on A1	≤ 200 ms	

Contacts

Type	2 CO, micro disconnection
Material	AgNi
Rated operational current	5 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	1250 VA
Max. DC load DC-1, 30 V / 250 V (Fig.2)	150 W / 60 W

Power supply- and control inputs (Start, Stop, Reset) (UC = AC / DC)

	UC 24...60 V	UC 110...240 V
Nominal voltage	19 ... 75	88 ... 265
Operating voltage range [V]	≤ 2	≤ 2
Power consumption [W]	48 ... 400	48 ... 400
Frequency range [Hz]	≤ 1.5	≤ 1
Allowed residual current AC / DC [mA]	≥ 11	≥ 50
Threshold voltage control inputs [V]		

Insulation

Test voltage between contacts and other connections: 2 kVrms 1 minute

General Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -25 ...60 °C
Mechanical life of contacts	≥ 30 x 10 ⁶ operations
Expected life @ 40 °C (MTBF) (except contacts)	> 150 000 h
Ingress protection degree	IP 40 when plugged in
Housing material / Weight	Lexan / 80 g

Standard types

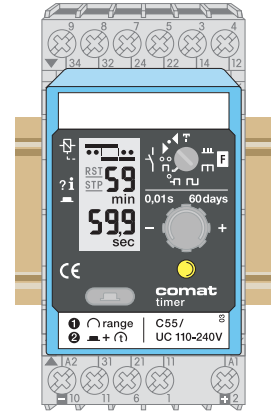
UC (AC/DC) 48...400 Hz
UC (AC/DC) 48...400 Hz

C55/UC24-60V R
C55/UC110-240V R

Accessories:

Socket:	S3-xx
Retaining clip	HF-50
Transparent front cover	FA-50
Front panel mounting set	FZ-50L (Frame + retaining clip + socket with soldering connections)

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.



Connection diagram

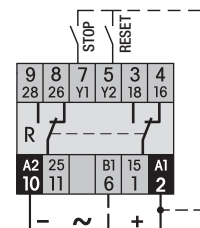


Fig.1 AC electrical endurance

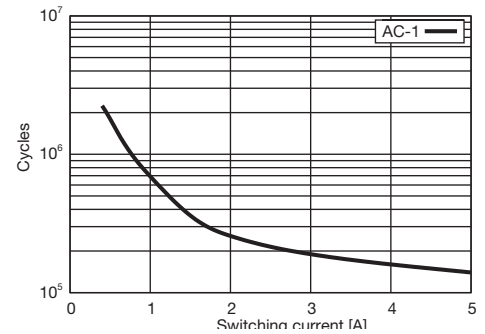
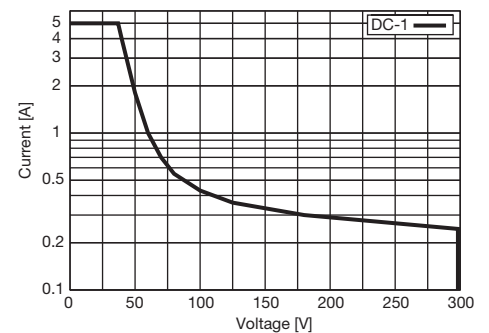
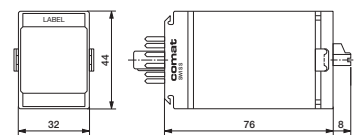


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947



C55.3; C55.4

Solid state outputs 11 pin plug-in time relay according to IEC 67-I-18a.

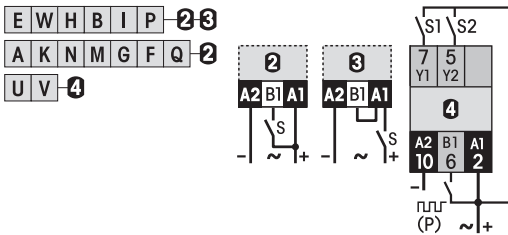


Type: C55.3/... V R, C55.4/DC24V R

Plug-in **digital time relay**, 2 types of solid state outputs: DC 24 V, UC 10...265 V, DC 24 V, UC 24 ... 60 V, UC 110 ... 240 V operating voltages, **15 time functions** including **rotational speed monitoring** or similar applications, time- STOP and RESET function inputs, Time run / function state display and interactive time setting by display, **Digital setting** of time until 60 days, **quartz precision**

Maximum output load xxx.3: 0.5 A / 265 V AC / DC; xxx.4: 2 A / 30 V DC

Time functions and related connection diagrams (Function diagrams: refer to page 114)

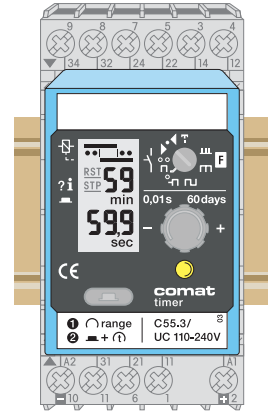


Stop input Y1, pin 7 (static):

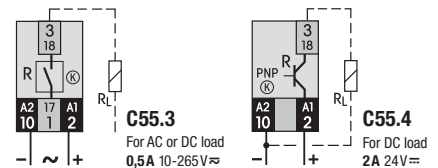
Stops time run while active

Reset input Y2, pin 5 (dynamic):

Sets timer to start condition, time runs again from beginning



Connection diagram



Time data

Time ranges seconds	0.01 s ... 59.9 s	resolution 0.01 s
Time ranges minutes	0.1 s ... 59 min 59.9 s	resolution 0.1 s
Time ranges hours	0.1 min ... 59 h 59.9 min	resolution 0.1 min
Time ranges days	0.1 h ... 59 day 23.9 h	resolution 0.1 h
Time accuracy, % from set value	0.05 %	
Repetition accuracy	0.05 % or ±10 ms	
Min. trigger pulse on B1 AC/DC	40 ms / 30 ms	
Reset time on A1 (AC/DC)	≤ 200 ms	

Outputs

	C55.3	C55.4
Type	UC (AC / DC) solid state	DC solid state
Overload and short circuit proof	insulated to inputs	A2 common connection
Max. switching voltage	265 V	30 V
Rated operational current	0.5 A	2 A
Max. inrush current	3 A (10 ms) Fig.1	20 A (not for continuous repetitive operation)
Max. inductive switch-off energy	0.5 Ws @ 2 s cycle time	1 Ws single pulse

Power supply- and control inputs (Start, Stop, Reset) (UC = AC / DC)

	DC 24 V	UC 24...60 V	UC 110...240 V
Nominal voltage	19 ... 30	19 ... 75	88 ... 265
Operating voltage range [V]	19 ... 30	19 ... 75	88 ... 265
Power consumption [W]	≤ 1	≤ 2	≤ 2
Frequency range [Hz]	-	48 ... 400	48 ... 400
Allowed residual current AC / DC [mA]	≤ 1	≤ 1.5	≤ 1
Threshold voltage, control inputs [V]	≥ 7	≥ 11	≥ 50

Insulation

	C55.3	C55.4
Test voltage between outputs and other connections	2 kVrms 1 minute	not insulated

General specifications

Ambient temperature storage /operation	-40 ... 85 °C / -25 ...60 °C
Expected life @ 40 °C (MTBF)	> 150 000 h
Ingress protection degree	IP 40 when plugged in
Housing material / Weight	Lexan / 80 g

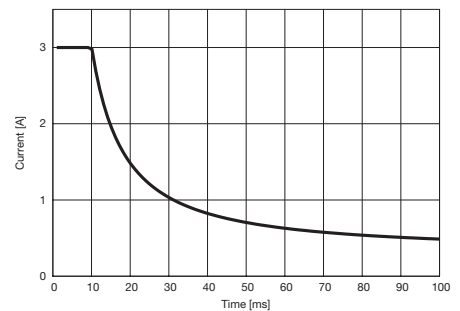
Standard types

UC (AC/DC) 48...400 Hz	C55.3/UC24-60V R C55.3/UC110-240V R
DC 24 V	C55.4/DC24V R

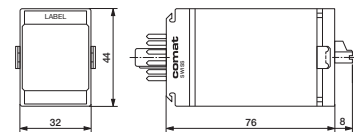
Accessories: Socket:

Retaining clip	S3-xx
Transparent front cover	HF-50
Spare label plate	FA-50
Front panel mounting set	PL-50
	FZ-50L (Frame + retaining clip + socket with soldering connections)

Fig.1 Inrush current



Dimensions [mm]



Technical approvals, conformities

EN 60947



C56

11 pin plug-in time relay according to IEC 67-I-18a, 2 change over contacts.
Potential-free triggering of Start- Stop- and Reset inputs.

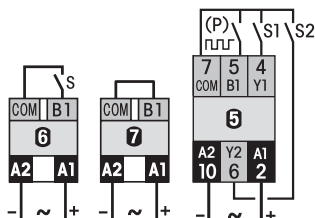
Type: C56/... V R

Plug-in digital time relay, 2 change over contacts, UC 24 ... 60 V, UC 110 ... 240 V operating voltages, 15 time functions including rotational speed monitoring or similar applications, time- STOP and RESET function inputs, Time run / function state display and interactive time setting by display, Digital setting of time until 60 days, quartz precision

Maximum contact load 5 A / 250 V AC-1 5 A / 35 V DC-1
Recommended minimum contact load 10 mA / 12 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)

E W H B I P 6 7
A K N M G F Q 6
U V 6



Stop input (static):

Stops time run

Reset input (dynamic):

Sets timer to start condition, time runs again from beginning

Time data

Time ranges seconds	0.01 s ... 59.9 s	resolution 0.01s
Time ranges minutes	0.1 s ... 59 min 59.9 s	resolution 0.1 s
Time ranges hours	0.1 min ... 59 h 59.9 min	resolution 0.1 min
Time ranges days	0.1 h ... 59 day 23.9 h	resolution 0.1 h
Time accuracy, % from set value	0.05%	
Repetition accuracy	0.05% or ±10 ms	
Min. trigger pulse on B1	30 ms	
Reset time on A1	≤ 200 ms	

Contacts

Type	2 CO, micro disconnection
Material	AgNi
Rated operational current	5 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	1250 VA
Max. DC load DC-1, 30 V / 250 V (Fig.2)	150 W / 60 W

Power supply data (UC = AC / DC)

	UC 24...60 V	UC 110...240 V
Nominal voltage	19 ... 75	88 ... 265
Operating voltage range [V]	19 ... 75	88 ... 265
Power consumption [W]	≤ 2	≤ 2
Frequency range [Hz]	48 ... 400	48 ... 400

Control inputs

Working voltage	10 V
Input current	≤ 4 mA
Max. transient voltage	1 kV, 50 μs

Insulation

Test voltage between contacts and other connections: 2 kVrms 1 minute

General Specifications

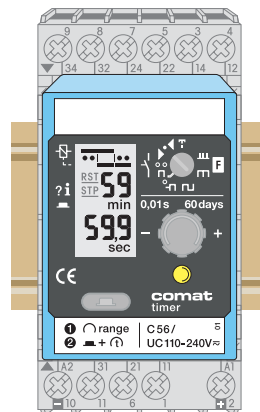
Ambient temperature storage /operation	-40 ... 85 °C / -25 ...60 °C
Mechanical life of contacts	≥ 30 x 10 ⁶ operations
Expected life @ 40 °C (MTBF) (except contacts)	> 150 000 h
Ingress protection degree	IP 40 when plugged in
Housing material / Weight	Lexan / 80 g

Standard types

UC (AC/DC) 48...400 Hz
UC (AC/DC) 48...400 Hz

C56/UC24-60V R
C56/UC110-240V R

Accessories: Socket:	S3-xx	Spare label plate	PL-50
Retaining clip	HF-50	Transparent front cover	FA-50
Front panel mounting set	FZ-50L (Frame + retaining clip + socket with soldering connections)		



Connection diagram

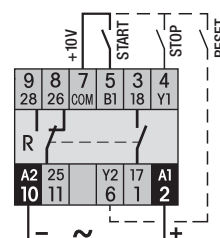


Fig.1 AC electrical endurance

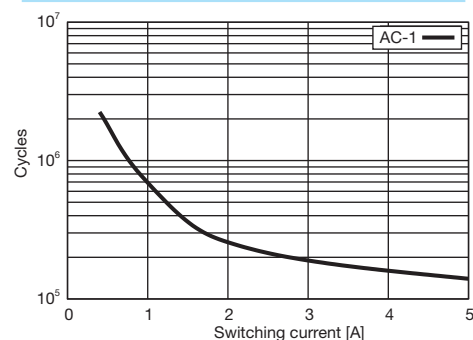
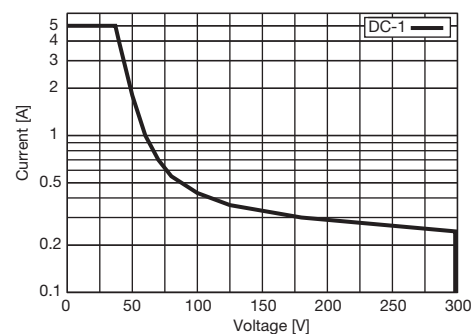
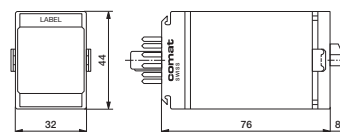


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947



CS1

11 pin plug-in time relay according to IEC 67-I-18a,
50 ms ... 60 minutes for wide band 12 ... 240 V operating voltage,
internal or external potentiometer operation



Type: CS1/UC 12-240V R

Plug-in time relay

1 change over contact

UC 12-240 V operating voltage

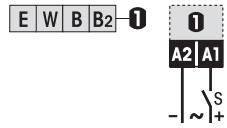
4 time functions, time ranges: 50 ms ... 60 min

LED for output state indication

Option for external fine adjustment time range potentiometer

Maximum contact load 8 A / 250 V AC-1
Recommended minimum contact load 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



External potentiometer (Pins 5, 7)
 1 M Ω (see accessories)
Max. potentiometer cable length
 50 m, shielded, GND on pin 5 (Z1)

Time data

5 partial time ranges, t_{max} (DIP switch)	0.6, 6, 60 s / 6, 60 min
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 5 ... 60
Time range tolerance	t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
Repetition accuracy	± 0.1 % or DC: 2 ms / AC: 10 ms
Reset time	≤ 30 ms
Power failure security	20 ms

Contacts

Type	1 CO, micro disconnection
Material	AgNi
Rated operational current	8 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	2000 VA
Max. DC load DC-1, 30 V / 250 V (Fig.2)	220 W / 75 W

Power supply- and control input (UC = AC / DC)

Nominal voltage (A1)	UC 12 ... 240 V
Operating voltage range	19 ... 250 V
Power consumption	≤ 1.4 W
Frequency range	45 ... 63 Hz

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

General Specifications

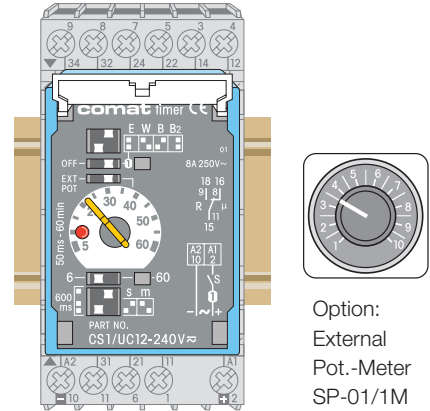
Ambient temperature storage /operation	-40 ... 85 $^{\circ}$ C / -25 ... 60 $^{\circ}$ C
Mechanical life of contacts	$\geq 30 \times 10^6$ operations
Ingress protection degree	IP 40 when plugged in
Housing material / Weight	Lexan / 75 g

Standard types

UC (AC/DC) **CS1/UC12-240V R**

Accessories

External potentiometer 1 M (Panel mounting + scale)	SP-01/1M
Socket	S3-xx
Retaining clip	HF-50
Transparent front cover	FA-50
Front panel mounting set	FZ-50L (Frame + retaining clip + socket with soldering connections)



Option:
 External Pot.-Meter SP-01/1M

Connection diagram

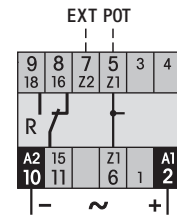


Fig.1 AC electrical endurance

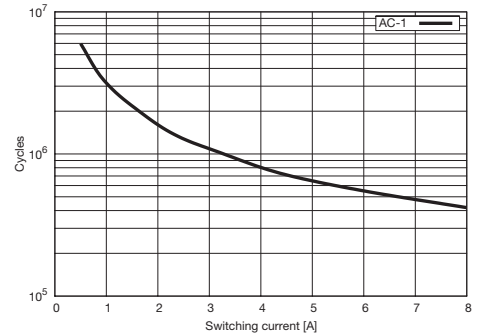
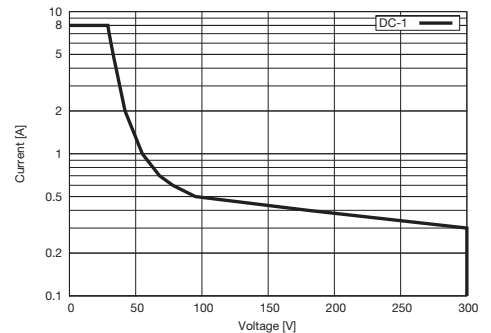
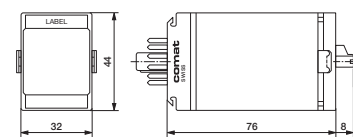


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



EN 60947

CS2

**11 pin plug-in time relay according to IEC 67-I-18a,
50 ms ... 60 h for wide band 12 ... 240 V operating voltage,
internal or external potentiometer operation**

Type: CS2/UC 12-240V R

Plug-in time relay

1 change over contact

UC 12-240 V operating voltage

7 time functions, time ranges: 50 ms ... 60 h

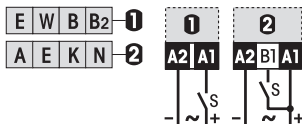
LED for output state indication

Option for external fine adjustment time range potentiometer

Maximum contact load 8 A / 250 V AC-1

Recommended minimum contact load 10 mA / 10 V

Time functions and related connection diagram (Function diagrams: refer to page 114)



External potentiometer pins 5, 7

1 M Ω (see accessories)

Max. potentiometer cable length

50 m, shielded, GND on pin5 (Z1)

Time data

7 partial time ranges, t_{max} (DIP switch)

0.6, 6, 60 s / 6, 60 min / 6, 60 h

Fine adjustment range (rotary knob)

$t_{min} \dots t_{max}$, 5 ... 60

Time range tolerance

t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %

Repetition accuracy

± 0.1 % or DC: 2 ms / AC: 10 ms

Min. trigger impulse on B1

≥ 30 ms

Reset time

≤ 30 ms

Power failure security

20 ms

Contacts

Type

1 CO, micro disconnection

Material

AgNi

Rated operational current

8 A

Max. switching voltage AC-1

250 V

Max. AC load AC-1 (Fig.1)

2000 VA

Max. DC load DC-1, 30 V / 250 V (Fig.2)

220 W / 75 W

Power supply- and control input (UC = AC / DC)

Nominal voltage (A1, B1)

UC 12 ... 240 V

Operating voltage range

19 ... 250 V

Power consumption

≤ 1.4 W

Frequency range

45 ... 63 Hz

Allowed residual current into B1 AC / DC

≤ 2.3 mA / 1.2 mA

Trigger threshold voltage on B1, AC / DC

6.5 V / 7 V

Insulation

Test voltage open contact

1 kVrms 1 minute

Test voltage between contacts and control input

2 kVrms 1 minute

General Specifications

Ambient temperature storage /operation

-40 ... 85 °C / -25 ...60 °C

Mechanical life of contacts

$\geq 30 \times 10^6$ operations

Ingress protection degree

IP 40 when plugged in

Housing material / Weight

Lexan / 75 g

Standard types

UC (AC/DC)

CS2/UC12-240V R

Accessories

External potentiometer 1 M (Panel mounting + scale)

SP-01/1M

Socket

S3-xx

Retaining clip

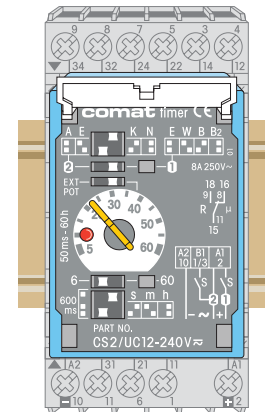
HF-50

Transparent front cover

FA-50

Front panel mounting set

FZ-50L (Frame + retaining clip
+ socket with soldering connections)



Option:
External
Pot.-Meter
SP-01/1M

Connection diagram

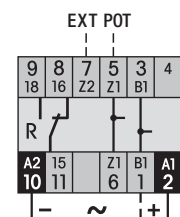


Fig.1 AC electrical endurance

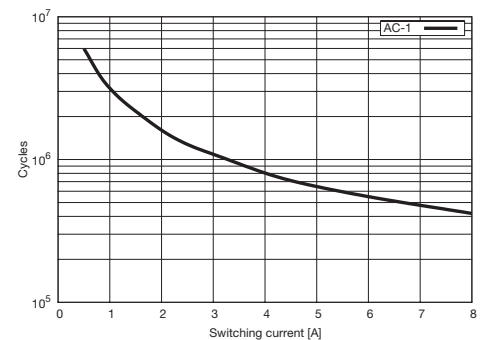
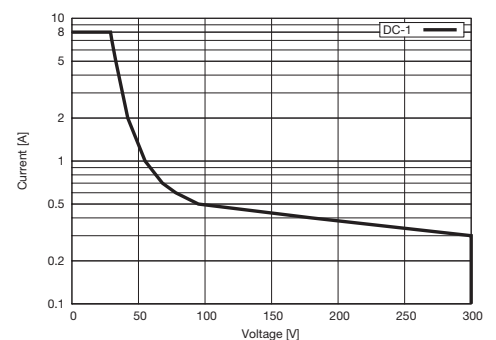
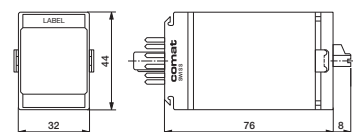


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



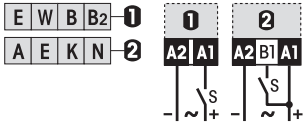
EN 60947

Type: CS3/UC 12-240V R

Plug-in time relay
2 change over contacts
UC 12-240 V operating voltage
7 time functions, time ranges: 50 ms ... 60 h
LED for output state indication

Maximum contact load 6 A / 250 V AC-1
Recommended minimum contact load 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Time data

7 partial time ranges, t_{max} (DIP switch) 0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob) $t_{min} \dots t_{max}$, 5 ... 60
Time range tolerance t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
Repetition accuracy ± 0.1 % or DC: 2 ms / AC: 10 ms
Min. trigger start impulse on B1 ≥ 30 ms
Reset time ≤ 30 ms
Power failure security 20 ms

Contacts

Type 2 CO, micro disconnection
Material AgNi
Rated operational current 6 A
Max. switching voltage AC-1 250 V
Max. AC load AC-1 (Fig.1) 1500 VA
Max. DC load DC-1, 30 V / 250 V (Fig.2) 180 W / 60 W

Power supply- and control input (UC = AC / DC)

Nominal voltage (A1, B1) **UC 12 ... 240 V**
Operating voltage range 19 ... 250 V
Power consumption ≤ 1.4 W
Frequency range 45 ... 63 Hz
Allowed residual current into B1 AC / DC ≤ 2.3 mA / 1.2 mA
Trigger threshold voltage on B1, AC / DC 6.5 V / 7 V

Insulation

Test voltage open contact 1 kVrms 1 minute
Test voltage between poles 2 kVrms 1 minute
Test voltage between contacts and control input 2 kVrms 1 minute

General Specifications

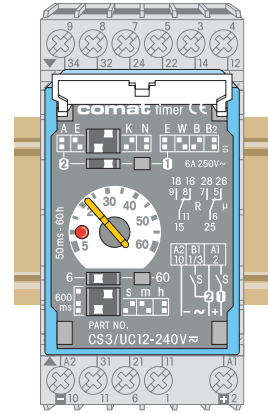
Ambient temperature storage /operation -40 ... 85 °C / -25 ... 60 °C
Mechanical life of contacts $\geq 30 \times 10^6$ operations
Ingress protection degree IP 40 when plugged in
Housing material / Weight Lexan / 75 g

Standard types

UC (AC/DC) **CS3/UC12-240V R**

Accessories

Socket: **S3-xx**
Retaining clip **HF-50**
Transparent front cover **FA-50**
Front panel mounting set **FZ-50L** (Frame + retaining clip + socket with soldering connections)



Connection diagram

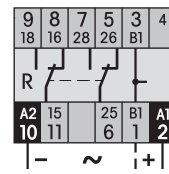


Fig.1 AC electrical endurance

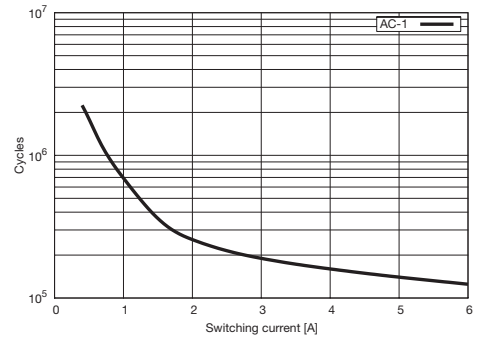
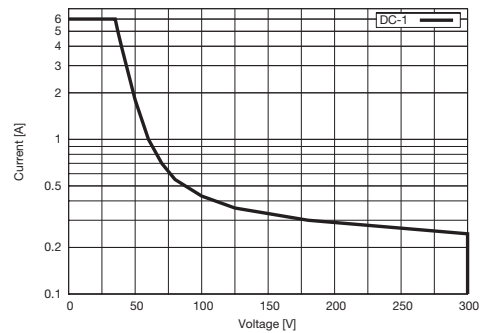
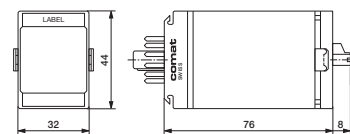


Fig. 2 DC load limit curve



Dimensions [mm]



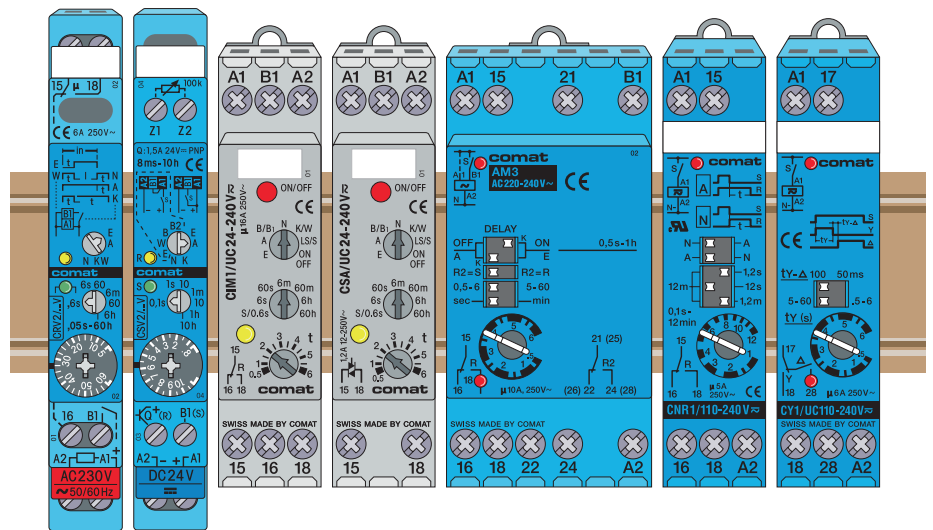
Technical approvals, conformities



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2.4 DIN Time Relays

DIN Time Relays



Application	Types	Functions	Min. time	Max. time	Contact rating	Design
Multi function	CRV2	E, W, A, K, N	0.05 s	60 h	6 A / 250 V	13 mm
Double time relay	CRV3	F, Q	2x 50 ms	2x 60 h	6 A / 250 V	13 mm
Multi function, external potentiometer, solid state output	CSV2	E, W, B, B2, E, A, K, N	8 ms	10 h	1.5 A / 30 V	13 mm
Universal relay, 8 time functions & step-on/step-off function, ON/OFF switch,	CIM1	E, B, W, A, K, N, B1, S, LS	50 ms	60 h	16 A / 250 V	17.5 mm
Universal relay, 8 time functions & step-on/step-off function, ON/OFF switch, AC solid state output	CSA	E, B, W, A, K, N, B1, S, LS	50 ms	60 h	2 A / 250 V	17.5 mm
Universal relay, 8 time functions & step-on/step-off function, ON/OFF switch, DC solid state output	CSD	E, B, W, A, K, N, B1, S, LS	50 ms	60 h	5 A / 24 V DC	17.5 mm
Universal timer, ON-OFF switch, 2 CO contacts	CM3	E, A, K, N, B1, B, W	50 ms	60 h	5 A / 250 V	17.5 mm
Multifunction time relay	AM2	E, A, K, W	0.5 s	60 min	10 A / 250 V	17.5 mm
Time run without auxiliary voltage	CNR1	A, N	0.1 s	12 min	5 A / 250 V	17.5 mm
Pulse shaper	CPF11	K, L, A	5 ms	600 ms	0.8 A / 24 V	17.5 mm
Universal timer with instantaneous contact	AM3	E, A, K, W	0.5 s	60 min	10 A / 250 V	35 mm
Star-Delta time relay	CY1	Y	0.5 s	60 s	6 A / 250 V	17.5 mm

CRV2

Multifunction time relay with mechanical change over output contact
5 time functions, 50 ms ... 60 h
DIN Rail mounting according to DIN 43 880

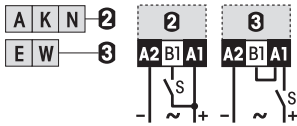


Type: CRV2/... V R

Multifunction time relay, 1 change over contact, UC 24 V, AC 230 V operating voltages, 5 time functions, LED state indicator for output and control input

Maximum contact load 6 A / 250 V AC-1 180 W DC-1
Recommended minimum contact load 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Time data

7 partial time ranges, t_{max} (rotary switch)	0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 5 ... 60
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.3 % or DC: 15 ms / AC: 25 ms
Response time, power on, on A1	≤ 30 ms
Min. trigger pulse on B1	35 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 100 ms
Power failure security	≥ 10 ms

Contacts

Type	1 CO, micro disconnection
Material	AgNi
Rated operational current	6 A
Max. inrush current (10 ms)	30 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	1500 VA
Max. DC load DC-1, 30 V / 250 V (Fig.2)	180 W / 75 W

Power supply and control input

	UC 24 V	AC 230 V
Nominal voltage	20 ... 28 V	195 ... 265 V
Operating voltage range	≤ 1.2 W	≤ 1.4 W
Power consumption	50 / 60 Hz	50 / 60 Hz
Frequency range	-	2 A, $\tau = 50 \mu s$
Inrush current A1	2.5 mA	3.6 mA
Input current into B1 typ.	≤ 1 mA	≤ 1 mA
Allowed residual current into B1	15 V / 17 V	100 V
Trigger threshold voltage on B1 AC / DC typ.		

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

General Specifications

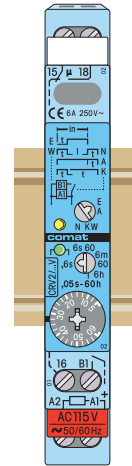
Ambient temperature storage /operation	-40 ... 80 °C / -25 ... 55 °C
Mechanical life of contacts	30 x 10 ⁶ operations
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1 mm ²
Ingress Protection degree	Housing: IP 40, terminals: IP 20
Max. Screw torque	0.4 Nm
Housing material / Weight	Lexan / 60 g

Standard types

UC, 50 / 60 Hz	CRV2/UC24V R
AC, 50 / 60 Hz	CRV2/AC230V R

Accessories

Marking strip:	Large	BS-13G
	Small	BS-13K



Connection diagram

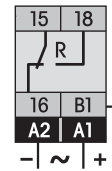


Fig.1 AC electrical endurance

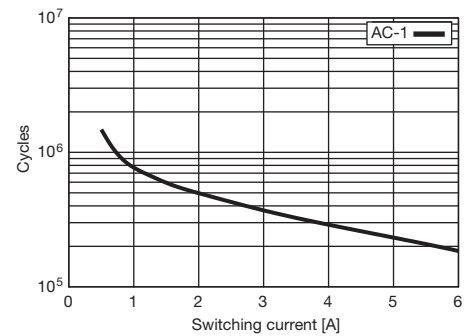
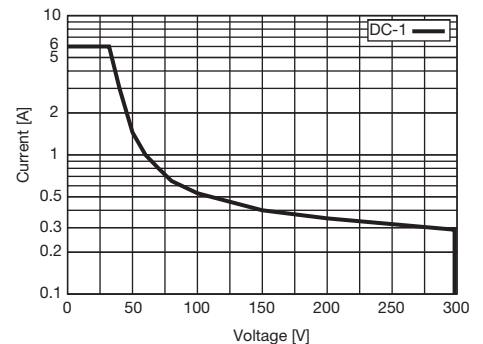
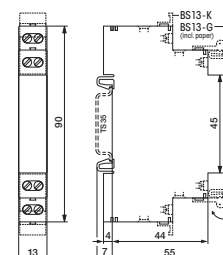


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



CRV3

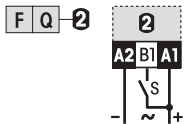
Time relay with 2 time elapses, mechanical change over output contact
2 time functions, 2 x 50 ms ... 60 h
DIN Rail mounting according to DIN 43 880

Type: CRV3/... V R

Time relay with 7 time ranges, 1 change over contact, UC 24 V, AC 230 V operating voltages, 2 time functions, 2 x 50 ms ... 60 h, LED state indicator for output and control input

Maximum contact load 6 A / 250 V AC-1 180 W DC-1
Recommended minimum contact load 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



The function selector switch is on the right side

Time data

7 partial time ranges, t_{max} (rotary switch)	0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 5 ... 60
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.3 % or DC: 15 ms / AC: 25 ms
Response time, power on, on A1	≤ 100 ms
Min. trigger pulse on B1	35 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 60 ms
Power failure security	≥ 20 ms

Contacts

Type	1 CO, micro disconnection
Material	AgNi
Rated operational current	6 A
Max. inrush current (10 ms)	30 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	1500 VA
Max. DC load DC-1, 30 V / 250 V (Fig.2)	180 W / 75 W

Power supply and control input

	UC 24 V	AC 230 V
Nominal voltage	19 ... 27.6 V	195 ... 265 V
Operating voltage range	≤ 1.2 W	≤ 1.4 W
Power consumption	50 / 60 Hz	50 / 60 Hz
Frequency range	-	2 A, $\tau = 50 \mu s$
Inrush current A1	5.8 mA	3.6 mA
Input current into B1 typ.	≤ 2 mA	≤ 1 mA
Allowed residual current into B1	12 V / 15 V	100 V
Trigger threshold voltage on B1, AC / DC		

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

General Specifications

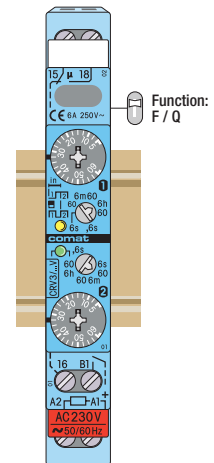
Ambient temperature storage /operation	-40 ... 80 °C / -25 ...55 °C
Mechanical life of contacts	30 x 10 ⁶ operations
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1 mm ²
Ingress Protection degree	Housing: IP 40, terminals: IP 20
Max. Screw torque	0.4 Nm
Housing material / Weight	Lexan / 60 g

Standard types

UC, 50 / 60 Hz	CRV3/UC24V R
AC, 50 / 60 Hz	CRV3/AC230V R

Accessories

Marking strip:	Large	BS-13G
	Small	BS-13K



Connection diagram

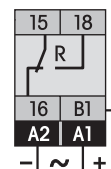


Fig.1 AC electrical endurance

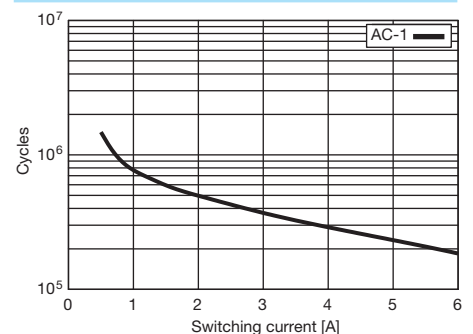
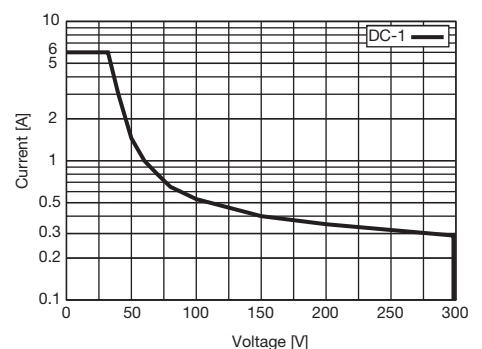
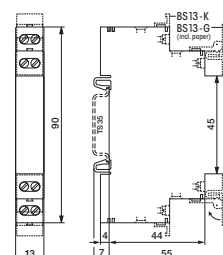


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



CSV2

Multifunction time relay, internal or external potentiometer operation, DC solid state output, 8 ms ... 10 h, DIN Rail mounting according to DIN 43 880

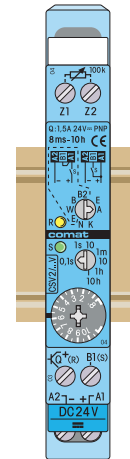
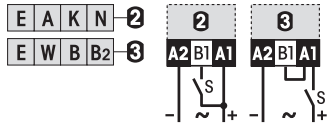


Type: CSV2/DC24V R

Multifunction time relay
 DC solid state output
 DC 24 V operating voltage
 Option for external fine adjustment time range potentiometer
 LED state indicators for output and control input

Maximum output load 1.5 A / 30 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Time data

7 partial time ranges, t_{max} (rotary switch)	0.1 , 1, 10 s / 1, 10 min / 1, 10 h
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.8 ... 10
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.3 % or 10 ms
Response time, power on, on A1	≤ 10 ms
Min. trigger pulse on B1	20 ms
Reset time B1 (AC/DC)	≤ 10 ms
Power failure security	≥ 10 ms

Output

Type: Power MOS FET	High side switch
Rated operational current	1.5 A
Max. inrush current (100 ms)	4 A
Max. switching voltage	30 V
Leakage current	≤ 100 µA
Inductive switch-off voltage protection	Free wheeling diode + 33 Ω

Power supply and control input

Nominal voltage	DC 24 V
Operating voltage range	15 ... 30 V
Power consumption	≤ 0.7 W
Control current into B1	≤ 9 mA
Allowed residual current into B1	≤ 1.5 mA
Trigger threshold voltage on B1 typ.	9 V

General Specifications

Ambient temperature storage /operation	-40 ... 80 °C / -25 ...55 °C
Ambient temperature, mounted side by side	-25 ...45 °C
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1 mm ²
Ingress Protection degree	Housing: IP 40, terminals: IP 20
Max. Screw torque	0.4 Nm
Housing material / Weight	Lexan / 50 g

Standard types

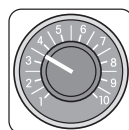
CSV2/DC24V R

Accessories

External potentiometer 100k
 (Panel mounting + scale):
 Marking strip:

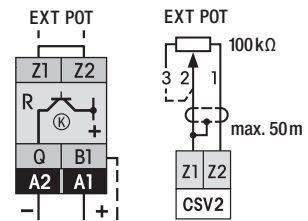
Large
 Small

SP-01/100k
BS-13G
BS-13K

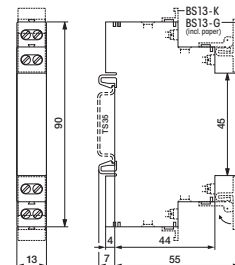


Option:
 External
 Pot.-Meter
 SP-01/100k

Connection diagram



Dimensions [mm]



Technical approvals, conformities



CIM1, CIMR (Railway)

Time relay with mechanical change over output contact
8 time functions + stepping function, ON-OFF switch, 50 ms ... 60 h,
DIN Rail mounting according to DIN 43 880



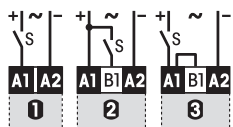
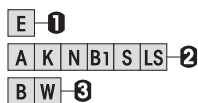
Type: CIM1/UC24 ... 240V

Sophisticated multifunction time relay, 1 change over power contact with zero crossing switching (50/60 Hz), 8 time functions and stepping function, time ranges: 50 ms ... 60 h, Multifunction LED state indicator, Suitable for any time-control application and also staircase lighting, Light-switch neon lamp current absorption on input B1, Manual switching function for maintenance, emergency, etc., 16.6 Hz power supply applications. Railway type available

Maximum contact load 16 A / 250 V AC-1 384 W DC-1
Recommended minimum contact load 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)

The functions are selectable by rotary switch



LED function table:

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data

7 partial time ranges, t_{max} (rotary switch)	0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
Repetition accuracy	± 0.1 % or DC: 2 ms / AC: 10 ms
Response time, power on, on A1	≤ 45 ms
Min. trigger pulse on B1	20 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 30 ms
Power failure security (50 / 60 Hz)	≥ 20 ms

Contacts

Material CIM1 / CIMR / Type	AgNi / 1 CO, micro disconnection
Rated operational current at 40 °C / 60 °C	16 A / 13 A
Max. inrush current	30 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	4k VA
Max. DC load DC-1 30 V / 250 V (Fig.2)	240 W / 85 W

Power supply- and control input

Nominal voltage (A1, B1)	UC 24-240 V (UC = AC / DC)
Operating voltage range	UC 19 ... 250 V
Power consumption	approx. 1 W
Frequency range	15 ... 60 Hz
Allowed DC residual current into B1	≤ 0.5 mA
AC Neon lamp residual current into B1	≤ 10 mA
Trigger threshold voltage on B1, AC / DC	15 / 17 V

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2.5 kVrms 1 minute

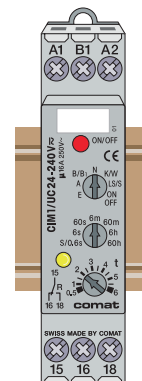
General Specifications

Ambient temperature storage /operation	-40 ... 80 °C / -40 ... 60 °C (Railway: -46 °C)
Mechanical life of contact	30 x 10 ⁶ operations
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Ingress protection degree	IP 20
Max. Screw torque	0.4 Nm
Housing material / weight	Lexan / 70 g

Standard types

UC (AC/DC) 15...60 Hz
Railway

CIM1/UC24-240V
CIMR/UC24 -240V



Connection diagram

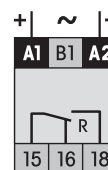


Fig.1 AC voltage endurance

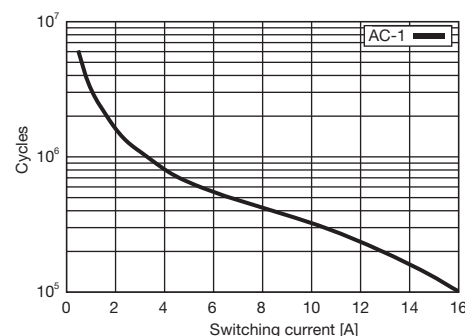
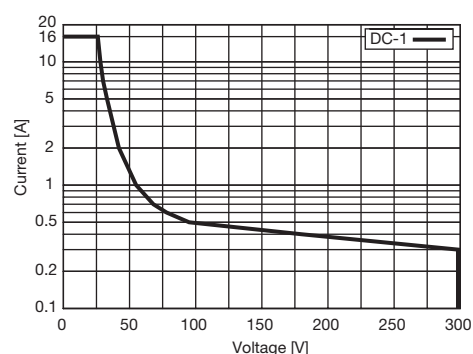
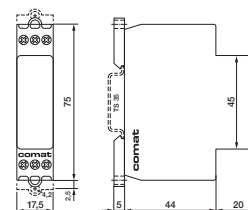


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 50155, EN 60730



CSA, CSAR (Railway)

Time relay with AC solid-state output

8 time functions + stepping function, ON-OFF switch, 50 ms ... 60 h, DIN Rail mounting according to DIN 43 880



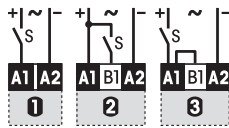
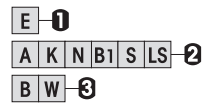
Type: CSA/UC24 ... 240V

Sophisticated multifunction time relay, 1 Triac output, suitable for high frequency of operations and inductive loads, 8 time functions and stepping function, time ranges: 50 ms ... 60 h, Multifunction LED state indicator, Suitable for any time-control application and also staircase lighting, Light-switch neon lamp current absorption on input B1, Manual switching function for maintenance, emergency, etc., 16.6 Hz applications. Railway type available

Maximum contact load	2 A / 250 V
Minimum contact load	50 mA

Time functions and related connection diagrams (Function diagrams: refer to page 114)

The functions are selectable by rotary switch



LED function table:

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data

7 partial time ranges, t_{max} (rotary switch)	0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
Repetition accuracy	± 0.1 % or DC: 2 ms / AC: 10 ms
Response time, power on, on A1	≤ 45 ms
Min. trigger pulse on B1	20 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 30 ms
Power failure security (50 / 60 Hz)	≥ 20 ms

Output

Type	Triac, zero crossing
Rated operational current at 40 °C (Fig.1)	2 A
Max. inrush current (10 ms)	100 A
Max. switching voltage	250 V
Max. AC load AC-1	300 VA
I ² t value	78 A ² s
Leakage current	< 1 mA

Power supply- and control input

Nominal voltage	UC 24-240 V (UC = AC / DC)
Operating voltage range	UC 19 ... 250 V
Power consumption	approx. 1 W
Frequency range	15 ... 60 Hz
Allowed DC residual current into B1	≤ 0.5 mA
AC Neon lamp residual current into B1	≤ 10 mA
Trigger threshold voltage on B1, AC / DC	15 / 17 V

Insulation

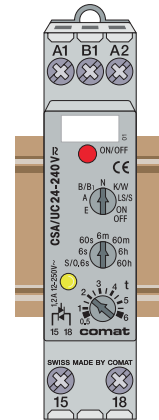
Test voltage between Output and control input	2.5 kVrms 1 minute
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General Specifications

Ambient temperature storage /operation	-40 ... 80 °C / -40 ... 60 °C (Railway: -46 °C)
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Ingress protection degree	IP 20
Max. Screw torque	0.4 Nm
Housing material / weight	Lexan / 70 g

Standard types

UC (AC/DC), 15...60 Hz	CSA/UC24-240V
Railway	CSAR/UC24 -240V



Connection diagram

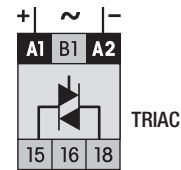
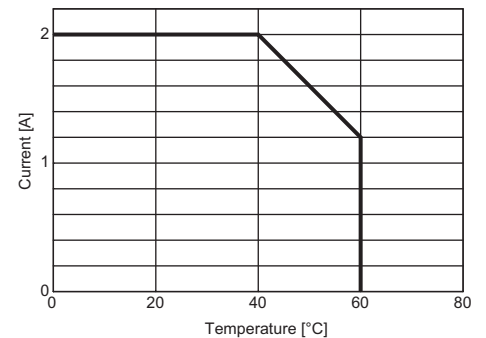
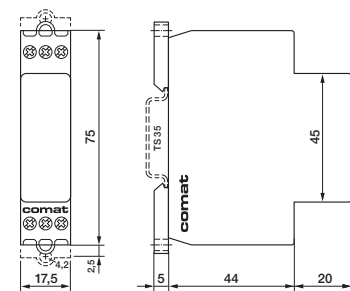


Fig. 1 Output derating curve



Dimensions [mm]



Technical approvals, conformities

EN 50155, EN 60730



CSD, CSDR (Railway)

Time relay with DC solid-state output

8 time functions + stepping function, ON-OFF switch, 50 ms ... 60 h
DIN Rail mounting according to DIN 43 880

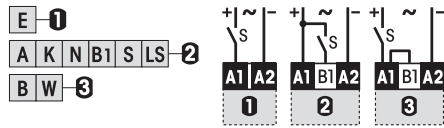


Type: CSD/ UC24 ... 240V

Sophisticated multifunction time relay
1 Transistor output
8 time functions and stepping function, time ranges: 50 ms ... 60 h
Multifunction LED state indicator
Suitable for any time-control application and also staircase-light control
Light-switch neon lamp current absorption on input B1
Manual switching function for maintenance, emergency, etc.
16.6 Hz applications. Railway type available

Maximum contact load 4 A / 30 V
Recommended minimum contact load 1 mA

Time functions and related connection diagrams (Function diagrams: refer to page 114)
The functions are selectable by rotary switch



LED function table:

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data

7 partial time ranges, t_{max} (rotary switch) 0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob) $t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
Repetition accuracy ± 0.1 % or DC: 2 ms / AC: 10 ms
Response time, power on, on A1 ≤ 45 ms
Min. trigger pulse on B1 20 ms (AC / DC)
Reset time B1 (AC/DC) ≤ 30 ms
Power failure security (50 / 60 Hz) ≥ 20 ms

Output

Type MOS FET
Rated operational current (Fig. 1) 4 A
Max. inrush current (10 μ s) 40 A
Max. switching voltage 30 V
Leakage current $< 10 \mu$ A

Power supply- and control input

Nominal voltage (UC = AC / DC) **UC 24-240 V**
Operating voltage range UC 19 ... 250 V
Power consumption approx. 1 W
Frequency range 15 ... 60 Hz
Allowed DC residual current into B1 ≤ 0.5 mA
AC Neon lamp residual current into B1 ≤ 10 mA
Trigger threshold voltage on B1, AC / DC 15 / 17 V

Insulation

Test voltage between Output and control input 2.5 kVrms 1 minute

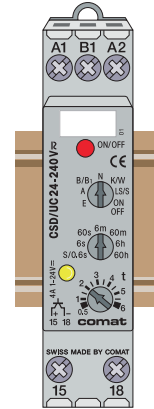
General Specifications

Ambient temperature storage /operation -40 ... 80 °C / -40 ... 60 °C (Railway: -46 °C)
Conductor cross section Stranded wire 2.5 mm², 2 x 1.5 mm²
Ingress protection degree IP 20
Max. Screw torque 0.4 Nm
Housing material / Weight Lexan / 70 g

Standard types

**UC (AC/DC), 15...60 Hz
Railway**

**CSD/UC24-240V
CSDR/UC24 -240V**



Connection diagram

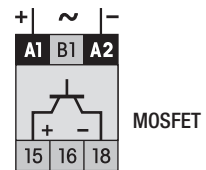
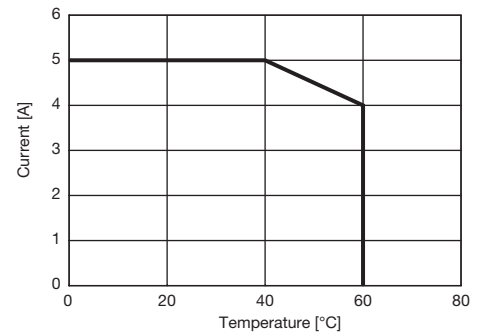
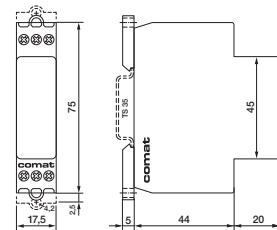


Fig. 1 Output derating curve



Dimensions [mm]



Technical approvals, conformities

EN 50155; EN 60730



CM3

Time relay with two mechanical change over output contacts
7 time functions, ON-OFF function, 50 ms ... 60 h
DIN Rail mounting according to DIN 43 880



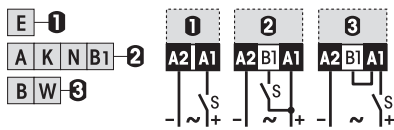
Type: CM3/... V R

Multifunction time relay, 7 time functions, time ranges: 50 ms ... 60 h, Multifunction LED state indicator, ON / OFF switching function for maintenance, emergency, etc., Suitable for railway applications

Maximum contact load 5 A / 250 V AC-1 150 W DC-1
Recommended minimum contact load 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)

The functions are selectable by rotary switch



LED function table:

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data

7 partial time ranges, t_{max} (rotary switch)	0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
Repetition accuracy	± 0.1 % or DC: 2 ms / AC: 10 ms
Response time, power on, on A1	≤ 25 ms
Min. trigger pulse on B1	35 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 40 ms
Power failure security	≥ 15 ms

Contacts

Type	2 CO, micro disconnection
Material	AgNi
Rated operational current	5 A
Max. inrush current	25 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	1250 VA
Max. DC load DC-1, 30 V / 250 V (Fig.2)	150 W / 75 W

Power supply and control input

	DC 12-24 V	DC 24-48 V / AC 24-240 V
Nominal voltage	9.6 ... 28.8 V	DC 19 ... 60 V AC 19 ... 250 V
Operating voltage range	9.6 ... 28.8 V	DC 19 ... 60 V AC 19 ... 250 V
Power consumption	approx. 1.3 W	approx. 1.3 W
Frequency range	-	45 ... 63 Hz
Control current into B1	≤ 13.8 mA	≤ 6 mA
Allowed residual current into B1	≤ 4.5 mA	≤ 1.5 mA
Trigger threshold voltage on B1	5.8 ... 6.5 V	DC 13 ... 18 V AC 11 ... 15 V
Inrush current B1, $\tau = 0.4$ ms	≤ 2.6 A	- ≤ 2.6 A

Insulation

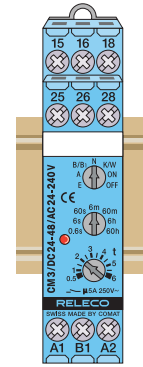
Test voltage open contact	1 kVrms 1 minute
Test voltage between poles	2.5 kVrms 1 minute
Test voltage between contacts and control input	2.5 kVrms 1 minute

General Specifications

Ambient temperature storage /operation	-40 ... 80 °C / -25 ... 60 °C
Mechanical life of contacts	15 x 10 ⁶ operations
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Ingress protection degree	IP 20
Max. Screw torque	0.4 Nm
Housing material / weight	Lexan / 72 g

Standard types

DC	CM3/DC12-24V R
DC, AC 45...63 Hz	CM3/DC24 -48V/AC24-240V R



Connection diagram

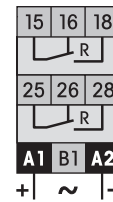


Fig.1 AC voltage endurance

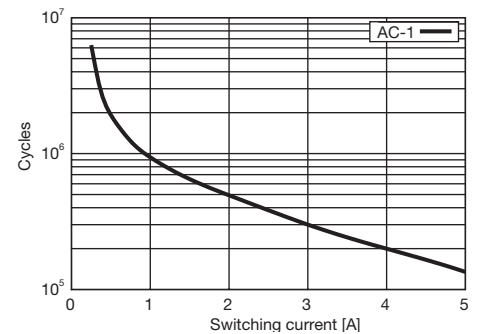
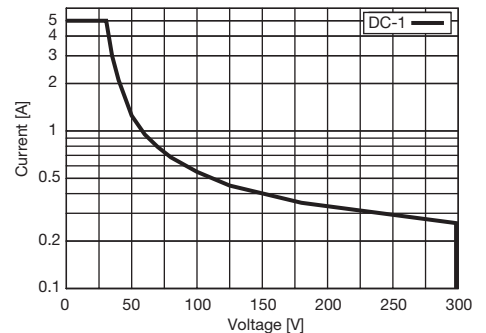
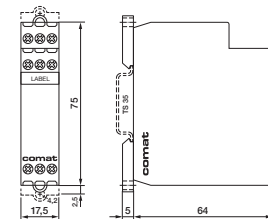


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



EN 50155, EN 60730

AM2

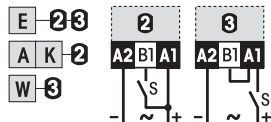
Time relay with 1 change over power contact
4 time functions, 0.5 s ... 60 minutes
DIN Rail mounting according to DIN 43 880

Type: AM2/ ... V

Multifunction time relay
 1 CO contacts
 4 time functions and ON function, time ranges: 0.5 s ... 60 minutes
 LED state indicator for output
 Also suitable for panel mounting 2 x M4

Maximum contact load	10 A 250 V AC-1	6 A 25 V DC-1
Recommended minimum contact load	100 mA / 12 V	

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Time data

4 partial time ranges, t_{max} (DIP switch)	6, 60 s / 6, 60 min
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.2 % or 20 ms
Response time, power on, on A1	≤ 50 ms
Min. trigger pulse width on input B1	100 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 90 ms
Power failure security	≥ 5 ms

Contacts

Type	Single contact, micro disconnection
Material	AgSnO ₂
Rated operational current	10 A
Max. inrush current (10ms)	16 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig. 1)	2500 VA AC-1
Max. DC load DC-1 24 V / 220 V (Fig. 2)	150 W / 70 W

Power supply- and control input

	UC 24 - 60 V	AC 220 - 240 V
Nominal voltage (UC = AC / DC)	20 ... 75 V	180 ... 265 V
Operating voltage range	≤ 1.5 W	≤ 1.5 W
Power consumption	40 ... 60 Hz	40 ... 60 Hz
Frequency range	≤ 25 mA (40 mA)	≤ 10 mA (15 mA)
Input current into B1 typ.	≤ 1.5 mA	≤ 1 mA
Allowed residual current into B1	14 / 17 V	140 V
Trigger threshold voltage on B1 typ AC / DC		

¹⁾ B1 can be used as power supply and control input, without A1. For func. E and W.
 The current is then higher, values in brackets.

Insulation

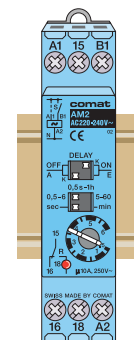
Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

General Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -40 ... 60 °C
Mechanical life of contact	20 x 10 ⁶ operations
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Ingress protection degree	IP 20
Max. Screw torque	0.4 Nm
Housing material / Weight	Lexan / 70 g

Standard types

UC (AC/DC) 40...60 Hz	AM2/UC24-60V R
	AM2/AC220-240V R



Connection diagram

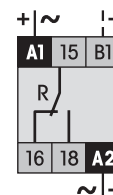


Fig.1 AC voltage endurance

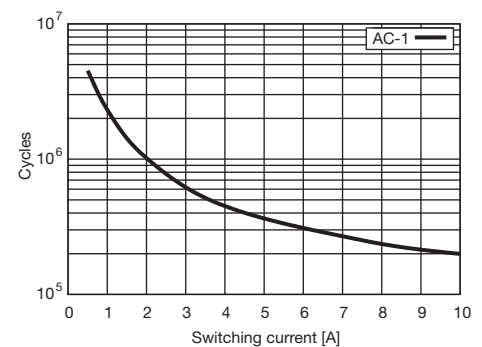
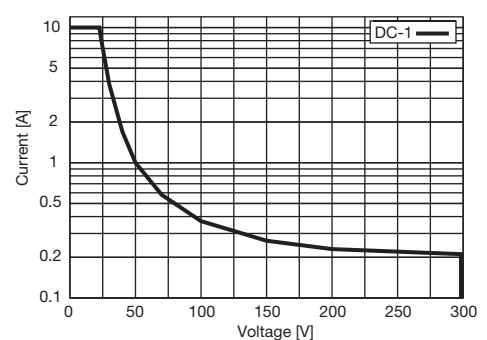
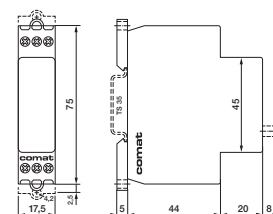


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



EN 60947

CNR1

**Time run without supply voltage,
mechanical change over output contact,
2 time functions, 0.1 s ... 12 minutes
DIN Rail mounting according to DIN 43 880**



Type: CNR1/... V R

time relay

1 change over contact, 250 V

UC 24 ... 60 V, UC 110 ... 240 V operation voltages

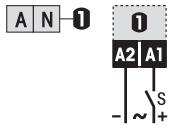
2 time functions, time ranges: 0.1 s ... 20 minutes

LED for supply voltage state indication

Also suitable for panel mounting 2 x M4

Maximum contact load	5 A / 250 V AC-1 5 A / 30 V DC-1
Recommended minimum contact load	1 mA / 0.1 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Time data

4 partial time ranges, t_{max} (DIP switch)	1.2 s / 12 s / 120 s / 12 minutes
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 1 ... 12
Time range tolerance	t_{min} : -25 % ... +5 % / t_{max} : -5 % ... +25 %
Repetition accuracy	± 1 %
Min. start impulse on A1	≥ 150 ms
Reset time	≥ 100 ms
Power failure security	5 ... 10 ms

Contacts

Type	1 CO, micro disconnection
Material	Gold flash over silver alloy
Rated operational current	5 A
Max. switching voltage AC-1	250 V
Max. switching voltage DC-1	125 V
Max. AC load AC-1 (Fig.1)	1250 VA
Max. DC load 30 V / 125 V (Fig.2)	150 W / 25 W

Control input (UC = AC / DC)

	UC 24 - 60 V	UC 110 - 240 V
Nominal voltage (A1)	20 ... 75	88 ... 265
Operating voltage range [V]	3 ... 15	2 ... 5
Input current [mA]	150	50
Inrush current (100 ms) [mA]	50	50
Frequency [Hz]	50	50
Threshold voltage AC / DC [V]	≥ 14 / ≥ 18	≥ 65 / ≥ 85

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

General Specifications

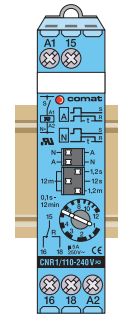
Ambient temperature storage /operation	-40 ... 85 °C / -25 ... 60 °C
Mechanical life of contacts	> 50 x 10 ⁶ operations
Ingress protection degree	IP 20
Housing material / Weight	Lexan / 60 g

Standard types

UC (AC/DC) 50 Hz	CNR1/UC24-60V R
	CNR1/UC110-240V R

Accessories

Label plate: (replacement)	BZS-DIN 17.5
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Connection diagram

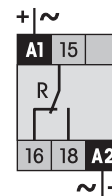


Fig.1 Contact endurance

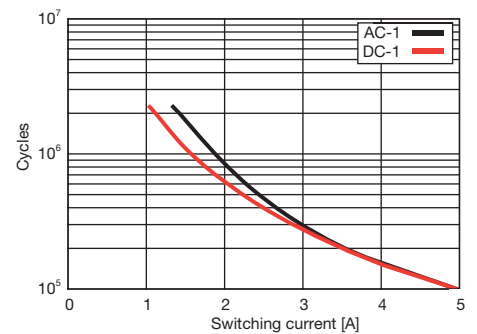
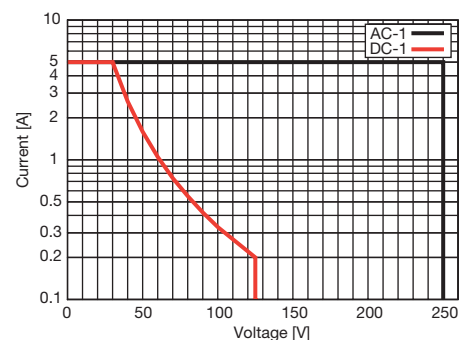
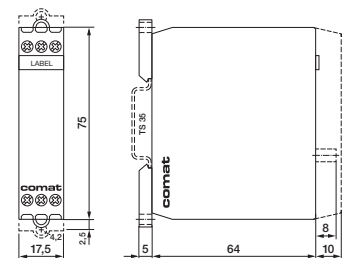


Fig. 2 Load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947



AM3

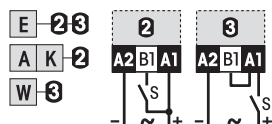
Time relay with 2 change over output contacts, one of them selectable as instantaneous contact
4 time functions, 0.5 s ... 60 minutes
DIN Rail mounting according to DIN 43 880

Type: AM3/ ... V

Multifunction time relay
2 CO contacts, 1 contact selectable as instantaneously or delayed
4 time functions and ON function, time ranges: 0.5 s ... 60 minutes
LED state indicators for output and control input

Maximum contact load 10 A / 250 V AC-1 10 A / 30 V DC-1
Recommended minimum contact load 100 mA / 5 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Selection of the operation mode of the second CO contact: DIP-switch:
R2 = S: instantaneously, R2 = R: Delayed.

Time data

4 partial time ranges, t_{max} (DIP switch)	6, 60 s / 6, 60 min
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.25 % or 20 ms
Response time, power on, on A1	≤ 50 ms
Min. trigger pulse on B1	100 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 90 ms
Power failure security	≥ 3 ms

Contacts

Type / Material	2 CO, micro disconnection / AgNi
Rated operational current	10 A
Sum current of both contacts	12 A @ $T_a = 45^\circ\text{C}$, 100 % duty cycle
Max. inrush current (20 ms)	16 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig. 1)	2500 VA
Max. DC load DC-1, 30 V / 100 V (Fig. 2)	300 W / 60 W

Power supply- and control input

	UC 24 - 60 V	AC 220 - 240 V
Nominal voltage (UC = AC / DC)	19 ... 75 V	195 ... 265 V
Operating voltage range	19 ... 75 V	195 ... 265 V
Power consumption	≤ 1.8 W	≤ 1.8 W
Frequency range	40 ... 400 Hz	40 ... 60 Hz
Input current into B1 typ.	≤ 20 mA (50 mA)	≤ 5 mA (15 mA)
Allowed residual current into B1	≤ 1.5 mA	≤ 1 mA
Trigger threshold voltage on B1 typ AC / DC	14 / 17 V	140 V

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

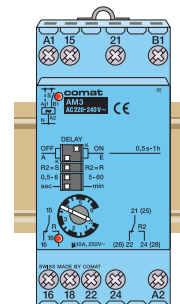
General Specifications

Ambient temperature storage /operation	-40 ... 80 °C / -40 ... 50 °C
Mechanical life of contact	10 ⁷ operations
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Ingress protection degree	IP 20
Max. Screw torque	0.4 Nm
Housing material / Weight	Lexan / 110 g

Standard types

UC (AC/DC) 40...400 Hz
AC 50 / 60 Hz

AM3/UC24-60V R
AM3/AC220-240V R



Connection diagram

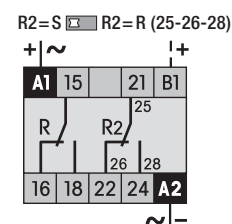


Fig.1 Contact endurance

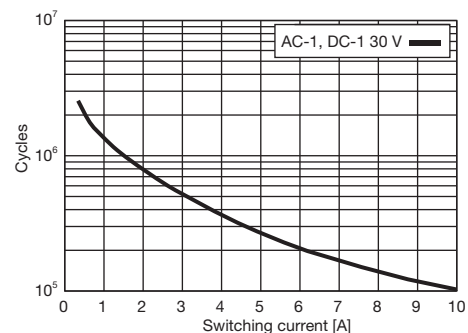
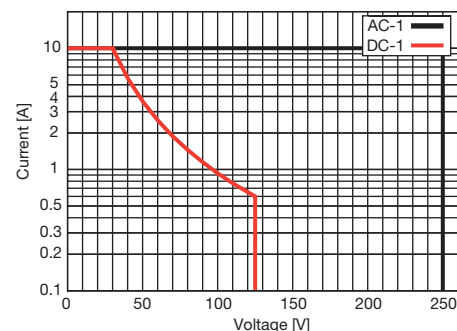
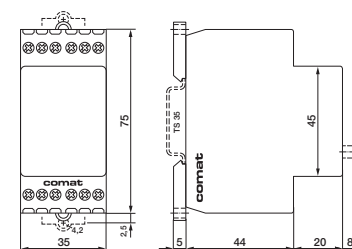


Fig. 2 Load limit curve



Dimensions [mm]



Technical approvals, conformities



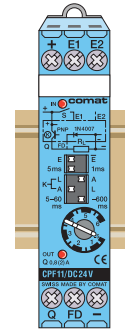
CPF11

**Versatile time relay with DC solid state output,
3 time functions for pulse shaping applications, 5 ... 600 ms
DIN Rail mounting according to DIN 43 880**



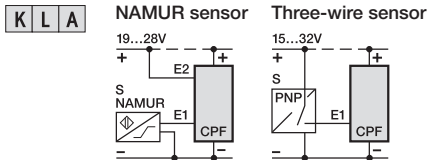
Type: CPF11/DC24V R

Pulse shaper. DC solid state output, short circuit proof. DC 24 V operating voltage. Very suitable as PLC-interface for contact- and sensor signals (NAMUR, 3 – wire) but also for inductive- or lamp loads. Selectable free wheeling diode built in. Adjustable input filter time. LED state indicators for output and control input. Also suitable for panel mounting 2 x M4



Maximum output load **2 A / 32 V**

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Logical input setting E, \bar{E} : With \bar{E} the output becomes high when the input is low.

When set the shortest time and function A, the device can be used as a switching amplifier.

Time data

2 partial time ranges, t_{max} (DIP switch)	60 , 600 ms
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.5 % or 2 ms
Min. trigger pulse width on input B1	1 ms / 5 ms selectable
Reset time B1	≤ 5 ms / ≤ 25 ms

Output

Type: Power MOS FET	High side switch
Rated operational current, $T_a = 60 \text{ }^\circ\text{C}$	0.7 A 100% duty cycle
Rated operational current, $T_a = 50 \text{ }^\circ\text{C}$	0.8 A 100% duty cycle
Operational pulse current	2 A when $t_{ON} \leq t_{OFF}$, $t_{ON} \leq 5 \text{ s}$
Short circuit current	≤ 7 A
Max. switching voltage	32 V
Leakage current (without free wheeling diode)	≤ 1 μA
Inductive switch-off voltage protection	Selectable free wheeling diode

Power supply and control input

Nominal voltage	DC 24 V
Operating voltage range normal operation	15 ... 32 V
Operating voltage range NAMUR operation (DIN 19234)	19 ... 28 V
Power consumption	≤ 0.6 W
Trigger threshold voltage E1	≤ 10 V
Trigger threshold voltage E2	≤ 15 V

General Specifications

Ambient temperature storage /operation	-40 ... 80 $^\circ\text{C}$ / -25 ... 60 $^\circ\text{C}$
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1 mm ²
Ingress Protection degree	Housing: IP 40, terminals: IP 20
Max. Screw torque	0.4 Nm
Housing material / Weight	Lexan / 60 g

Standard types

CPF11/DC24V R

Accessories

Label plate: (replacement) **BZS-DIN 17.5**

Connection diagram

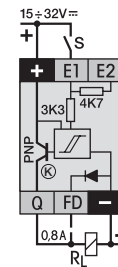


Fig. 1 Derating Curve

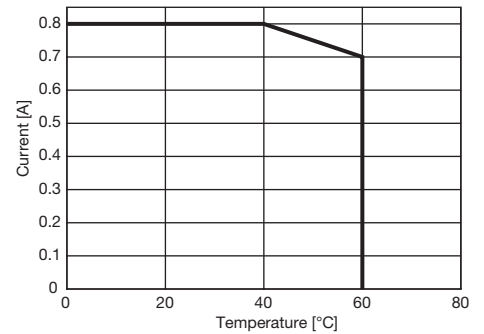
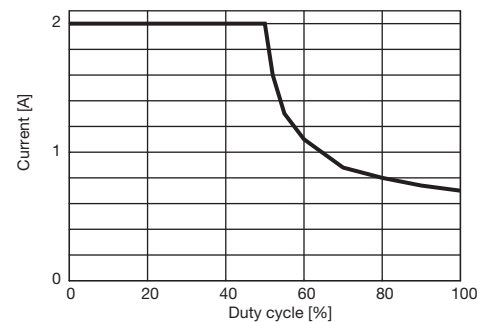
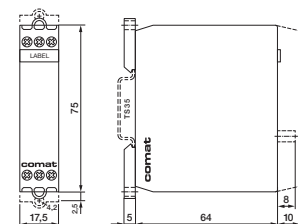


Fig. 2 Current vs. duty cycle



Dimensions [mm]



Technical approvals, conformities



CY1

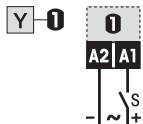
Star - Delta starting time relay. 0.5 ... 60 s
DIN Rail mounting according to DIN 43 880

Type: CY1/... V R

Star-Delta starting time relay
Adjustable star starting time until 60 s
2 switch over delay times, 50 ms, 100 ms
LED state indicators for control input and delta-run
Also suitable for panel mounting 2 x M4

Maximum contact load 6 A / 250 V AC-1 180 W DC-1
Recommended minimum contact load 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 114)



Time data

2 partial time ranges, t_{max} (DIP switch)	0.5 ... 6 s / 5 ... 60 s
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -20 % ... +0 % / t_{max} : -0 % ... +20 %
Repetition accuracy	± 0.1 %
Switch over delay time (DIP switch)	50 ms / 100 ms (-0 / + 40 %)
Power failure security	≥ 25 ms

Contacts

Type	2 CO, micro disconnection
Material	AgNi
Rated operational current	6 A
Max. inrush current (10 ms)	30 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	1500 VA
Max. DC load DC-1, 30 V / 250 V (Fig.2)	180 W / 75 W

Control input

	UC 24-60 V	UC 110-240 V
Nominal voltage	20 ... 75 V	90 ... 265 V
Operating voltage range	20 ... 75 V	90 ... 265 V
Power consumption	≤ 1 W	≤ 1 W
Frequency range	50 Hz / 60 Hz	50 Hz / 60 Hz
Threshold voltage AC / DC	≤ 17 V / ≤ 19	≤ 60 V / ≤ 85 V
Max. Inrush current	1.5 A / 100 μs	0.6 A / 100 μs

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

General Specifications

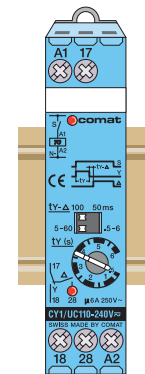
Ambient temperature storage /operation	-40 ... 80 °C / -25 ... 60 °C
Mechanical life of contacts	30 x 10 ⁶ operations
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Ingress protection degree	IP 20
Max. Screw torque	0.4 Nm
Housing material / Weight	Lexan / 76 g

Standard types

UC 50 Hz /60 HZ	CY1/UC24-60V R
	CY1/UC110-240V R

Accessories

Label plate: (replacement)	BZS-DIN 17.5
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Connection diagram

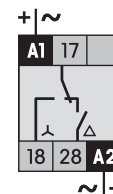


Fig.1 AC electrical endurance

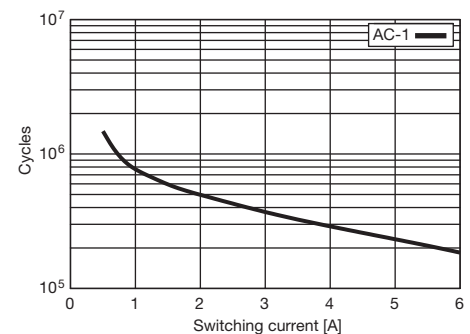
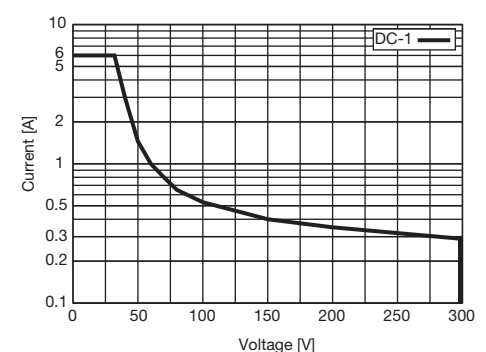
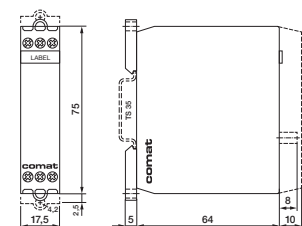


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60 947