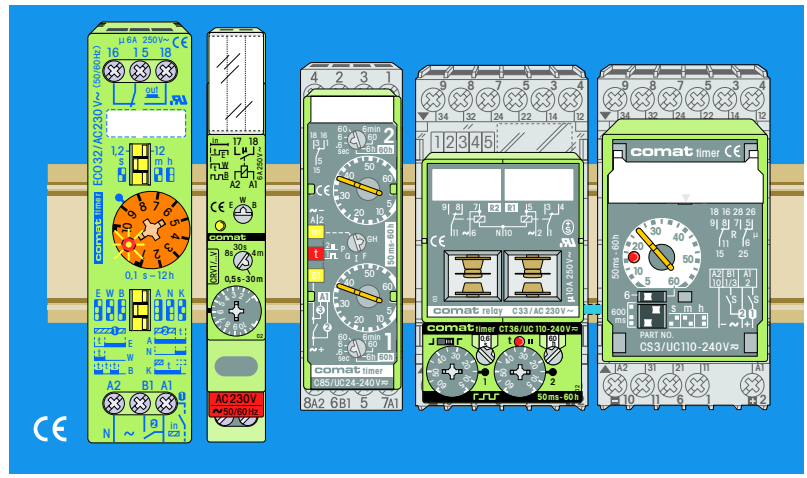
comat



Time delay relays

Time cubes®
Pulse shapers

01 E

KÜHN

Kühn Controls AG, Vertriebsbüro Deutschland, Gräfenhäuser Str. 14, D-75305 Neuenbürg
Tel.: +49- (0)7082-940000, Fax: +49- (0)7082-940001, eMail: sales@kuehn-controls.de, www.multicomat.net

New in this prospectus • • •

• • • **Multifunctional time delay relays ECO30**
New: With UC24V also suited for AC24V~ 6

• • • **Multifunctional time delay relays 16²/₃Hz**
New: Type CM1, CM1L usable even from 16²/₃Hz 9

• • • **Time cubes CT2, CT3**
New: Now with only 1 time range 0,2s - 30min..... 13

• • • **Restart delay relay**
New: Type C65, C66 with function X_1 17

• • • **Multifunctional time delay relay C56**
According to C55, but with potential free triggering..... 18

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

comat

Delay functions

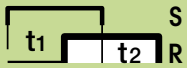
E On delay

S ⇒ R on with delay
SOFF ⇒ R off

A Off delay

S ⇒ R on
SOFF ⇒ R off with delay

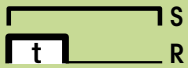
F On and off delay



S ⇒ R on with delay (t1)
SOFF ⇒ R off with delay (t2)

Shot timing modes

W One shot leading edge

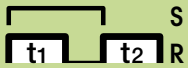


S ⇒ R on for t
SOFF ⇒ R off
(pulse clipping)

N One shot trailing edge

SOFF ⇒ R on for t
S on for t ⇒ R off

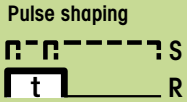
Q One shot leading and trailing edge



S ⇒ R on for t1
SOFF ⇒ R on for t2
SOFF off for t1 ⇒ R off

Pulse shaping

K Pulse shaping



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

M Pulse shaping

SOFF ⇒ R on for t
S ▬ no influence on R and t

Blinker functions

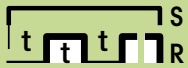
B Blinker, pulse start

S ⇒ R on/off periodically
according to t
SOFF ⇒ R off

B1 Blinker, pulse start, trailing pulse

S ⇒ R on/off periodically
according to t
SOFF: last pulse = t

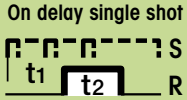
B2 Blinker, interval start



S ⇒ R after t on/off periodically
according to t
SOFF ⇒ R off

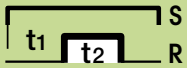
Delayed pulse

G On delay single shot



S (pulse or continuous contact)
⇒ R after t1 on for t2
S ▬ no influence on R and t

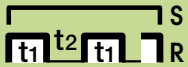
H On delay single shot



S ⇒ R after t1 on for t2
SOFF ⇒ R off

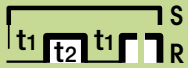
Repeat cycle timer

I Repeat cycle timer, pulse start



S ⇒ R on/off periodically
according to t1 and t2
SOFF ⇒ R off

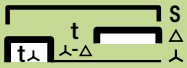
P Repeat cycle timer, interval start C55, CT1: t2 t1



S ⇒ R after t1 (t2) on/off periodically according to t2 and t1
SOFF ⇒ R off

Special functions

Y Star-delta timer



S ⇒ Y on for tY
YOFF ⇒ Δ on with delay for tY-Δ
SOFF ⇒ Δ off

X1 Restart delay

S ⇒ R on.
SOFF ⇒ R off and starts t.
S ⇒ R restart only after t.

Stop/Reset

tSTOP	SSTOP interrupts t (t-addition)	T	t is stopped ▬ ⇒ R on/off
tRESET	SRESET resets t t restarts immediately	T	Test

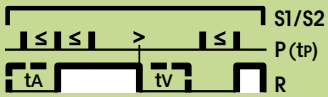
NEW

S = Triggering
R = Output circuit
⇒ = switches...

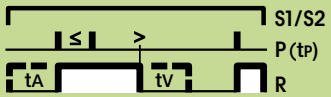
ON OFF

Pulse sequence monitoring

U



V



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

≤: Pulse separation is **smaller** than the time tP
>: Pulse separation is **larger** than the time tP

Start with S1 = **without** start-up short-out tA
Start with S2 = **with** start-up short-out tA

tV = settable alarm delay (tA = tV)

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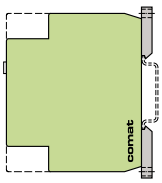
DIN series



Page	Type	Function																					t max.			
		E	A	F	W	N	Q	K	L	M	B	B1	B2	G	H	I	P	Y	U V	STOP	RESET	EXT POT	sec	min	hrs	day
5	CRE1	●																						30		
	CRA1		●																					30*		
	AE2	●																						1,5		
	AE2M																							12		
	AA2		●																					1,5		
	AA2M																							12		
	CY1																	●					60			
6	ECO31	●			●						●													20		
	ECO32	●	●		●	●		●			●														12*	
7	CRV1	●			●						●													30		
	CRV2	●	●		●	●		●																	60*	
	CSV2																					●			10*	
	CRV3			●			●																			
	CRT3															●	●								60*	
8	AM1	●			●						●		●													
	AM2	●	●		●			●																60		
	AM3 1)																									
9	CM1																							100		
	CM1L	●	●		●			●																	12	
	CM2																			●	●	●				
	CNR1		⊘			⊘																		12		
	CT1																							60		
	CT1L															●	●								30	
10	CPF11		●		●			●	●														0,6			
	CPF22		●					●															0,2			

NEW

NEW

Plug-in series

Page	Type	Function																					t max.			
		E	A	F	W	N	Q	K	L	M	B	B1	B2	G	H	I	P	X1	U V	STOP	RESET	EXT POT	sec	min	hrs	day
12	C81	●											●											30		
	C82	●	●		●			●																60		
	C83	●	●	△	●	●	△	●	●		●	●		▲	▲										60*	
	C84		⊘			⊘																		20		
	C85			●			●							●	●	●	●								60*	
13	CT..-E 30	●																								
	CT..-A 30		●																							
	CT..-K 30							●																30		
	CT..-W30				●																					
	CT..-B 30										●															
14	CT30 1)	●			●						●													30		
	CT32 1)	●	●		●	●		●			●	●												60*		
	CT33 1)	●	●	△	●	●	△	●	●		●	●		▲	▲										60*	
	CT36 1)															●	●									
16	CS1	●			●						●		●									●		60*		
	CS2																					●				
	CS3	●	●		●	●		●			●		●												60*	
	C63																									
17	C64		⊘			⊘																		20		
	C65																	○						6		
	C66																									
18	C52	●	●																					60		
	C53	●	●	●	●	●	●	●			●				●	●									60	
	C55	●	●	●	●	●	●	●		●	●			●	●	●	●		●	●	●					60
	C56																									

NEW

NEW

1) alternatively with instantaneous contact

⊘ without auxiliary voltage (relay bistable)

○ without auxiliary voltage (relay monostable)

△ $t_2 = t_1$

▲ $t_2 = 0{,}5\,s$

✶ TF60 long time setting

The TF60 setting permits the setting of long delay times by micro chronometering in the sec/min range and subsequent switching to min/h. Therefore for the checking of long-duration settings the time lapse no longer has to be reckoned.

Example for a delay time of 38 h:

1. Set range switch to 60 sec
2. Set 38 sec on the potentiometer (e.g. check 38 sec by chronometer)
3. Set range switch to 60 h

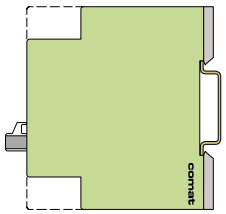
The delay time now amounts to 38 h.

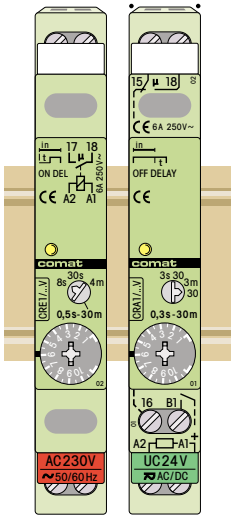
μ = contact opening < 3 mm

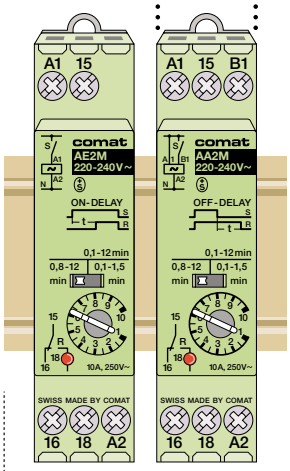
comat

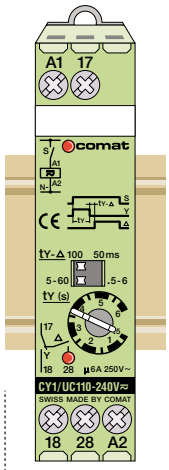
DIN time delay relays (1 function)

C13 | 13 | DIN A | 17,5 | DIN C







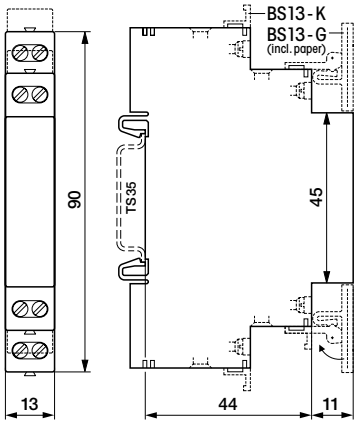


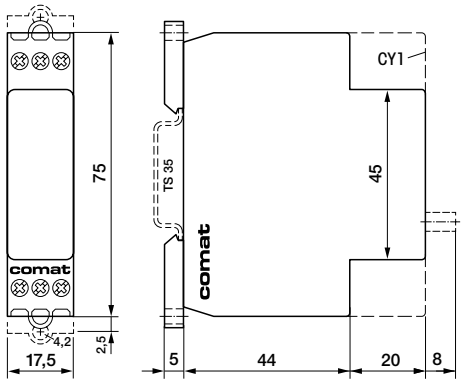
CE c UL us

	CRE1	CRA1	AE2 AE2M	AA2 AA2M	CY1
Economy time delay relays Only 13 or 17,5 mm wide. Ideal for applications with a fixed function E, A or Y. Suited for snap-on installation in accordance with DIN 43880.	**Economy time delay relay** on delay, voltage controlled, LED for R.	**Economy time delay relay** off delay, voltage controlled, LED for R.	**Economy time delay relay** on delay, voltage controlled. 1 changeover contact. Output-LED.	**Economy time delay relay** off delay, voltage controlled. 1 changeover contact. Output-LED.	**Star-delta time delay relay** with adjustable ⅄-△ interval. Safety locking of the △ ouput.
E-❶ Triggering Function → page 3	E-❶	A-❷	E-❶	A-❷	Y-❶
Time range ✶ TF60 setting → page 4	0,5-8s... 2-30min	0,3-3s... 3-30min ✶	AE2 0,8s-1,5m AE2M 0,1-12min	AA2 0,8s-1,5m AA2M 0,1-12min	t⅄ 0,5-60s t⅄-△ 50/100ms
Triggering	❶ A2 A1 S	❷ A2 B1 A1 S			
	17 18 R A2 A1 µ6A 250V~	15 18 R 16 B1 A2 A1 µ6A 250V~	A1 15 R 16 18 A2 µ10A 250V~	A1 15 B1 R 16 18 A2 µ10A 250V~	A1 17 ⅄ △ 18 28 A2 µ6A 250V~
~ AC 50/60Hz	AC115V, AC230V		AC110-127V, AC220-240V		UC110-240V
≂ UC AC/DC	UC24V		UC24V		UC24-60V
▮▮▮▮▮▮ Ordering no. ➡	CRE1 / V	CRA1 / V	AE2 / ....V AE2M / V	AA2 / ....V AA2M / V	CY1 / V

Example of order:
Time delay relay CRE1/AC230V

Example of order:
Time delay relay AE2/UC24V



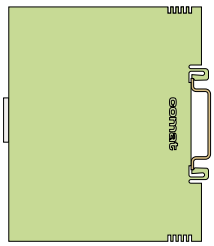


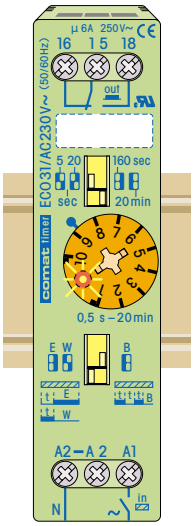
Multifunctional time delay relays

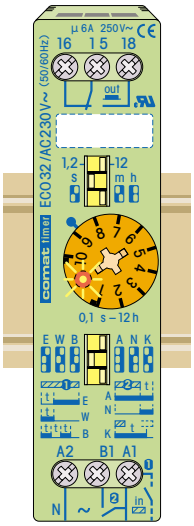
comat

Multifunctional time delay relays

ECO 30







CE cULus

Multifunctional time delay relays 22,5 mm
for timing functions from 0,1s up to 12 hours.

ECO 31

Economy time delay and blinker relay
3 functions,
voltage controlled.
LED for R.

ECO 32

Multifunctional time delay relay
2 delay functions,
2 shot timing modes, blinker pulse shaping K.
LED for R.

E 1 Triggering
Function → page 3

E W B 1

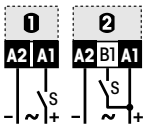
E W B 1
A K N 2

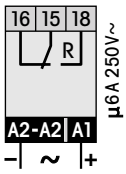
Time range
✶ TF60 setting → page 4

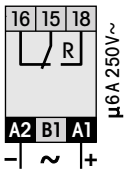
0,5 s - 20 min
0,5 - 5 s ... 2 - 20 min

0,1 s - 12 h ✶
0,1 - 1,2 s ... 1 - 12 h

Triggering







~ AC 50/60 Hz

≂ UC AC/DC

AC 115 V, AC 230 V
UC 24 V

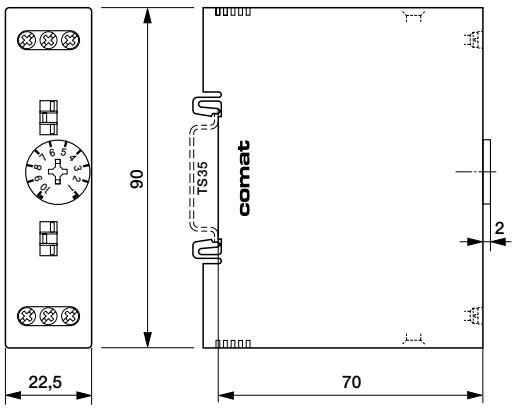
AC 115 V, AC 230 V
UC 24 V

Ordering no. →

ECO31 / V

ECO32 / V

Example of order:
comat timer ECO32/AC230V



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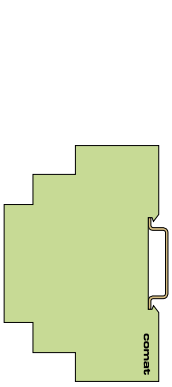
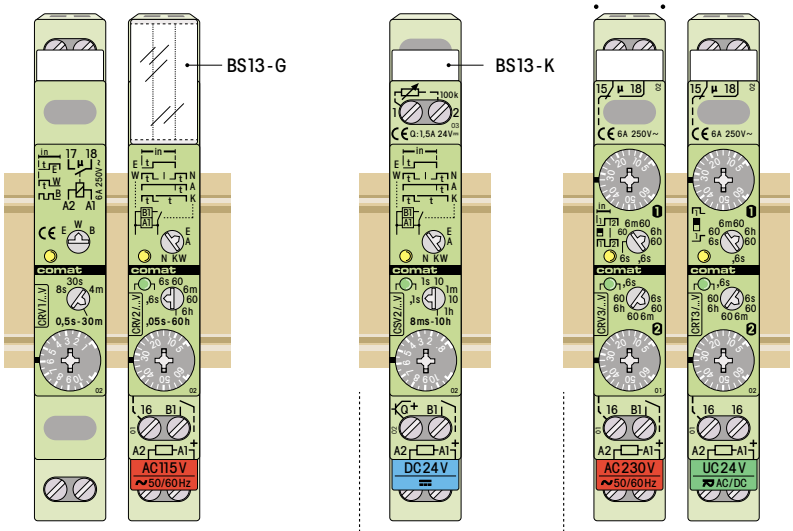
comat

Multifunctional time delay relays

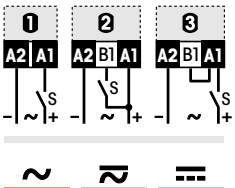
C13

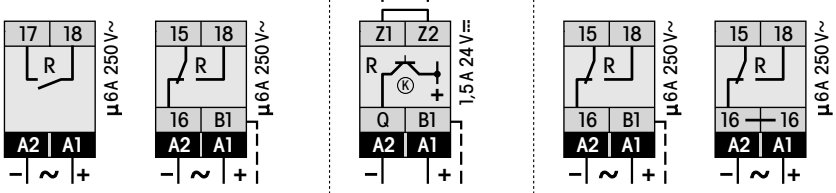




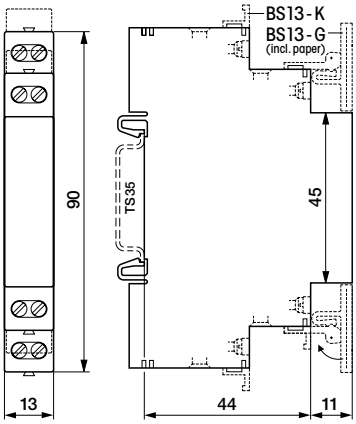
CE c UL us

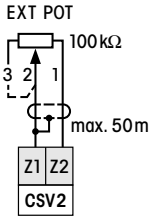
	CRV1	CRV2	CSV2	CRV3	CRT3
Ultra-narrow 13 mm time delay relay system for all timing functions from 50 ms up to 60 hours. With only 13 mm fitting width especially suited for use in the industrial interface sector.	**Economy time delay and blinker relay** 3 functions, voltage controlled. LED for R.	**Universal multi-functional time delay relay** 2 delay functions, 2 shot timing modes, pulse shaping K. LED for B1 + R.	**Multifunctional time delay relay** like CRV2, but with solid-state ouput and connection for remote potentiometer.	**Double time delay relay** F (E and A) or Q (W and N). t1/t2 separately settable. LED for B1 + R.	**Universal repeat cycle timer** Pulse or pause start. t1/t2 separately settable. LED for A1 + R.
E ❶ Triggering Function → page 3	E W B ❶	E W ❸ A K N ❷	E W ❸ A K N ❷	F Q ❷	I P ❶
Time range ✶ TF60 setting → page 4	0,5-8 s... 2-30 min	50-600 ms... 5-60 h ✶	8-100 ms... 0,8-10 h ✶	t1: 50-600 ms...5-60 h ✶ t2: 50-600 ms...5-60 h ✶	
Triggering			EXT POT		
AC 50/60 Hz	AC115 V, AC230 V			AC115 V, AC230 V	
UC AC/DC	UC24 V		DC24 V	UC24 V	
Ordering no.	CRV1 / V	CRV2 / V	CSV2 / V	CRV3 / V	CRT3 / V





Example of order:
Time delay relay CRV2/AC230V





Built-in potentiometer
SP-01/100 k
(page 19)

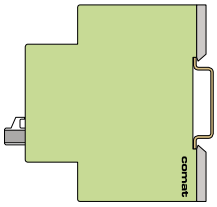
Multifunctional time delay relays

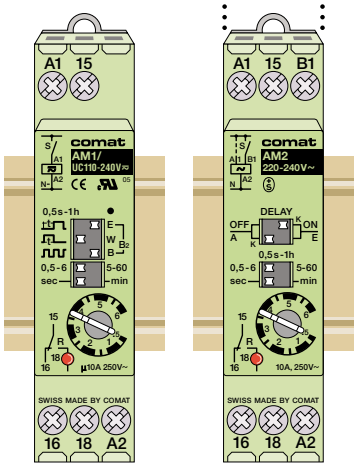
comat

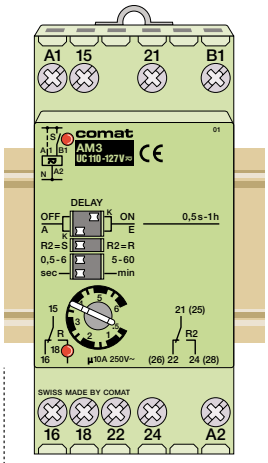
Multifunctional time delay relays

DIN A

17,5

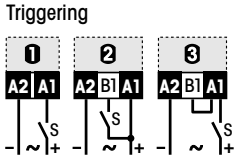
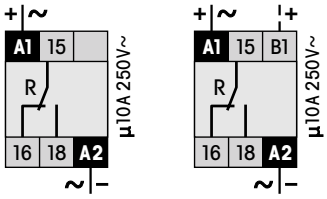
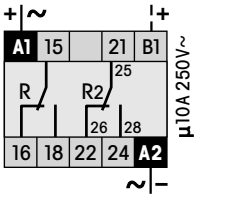




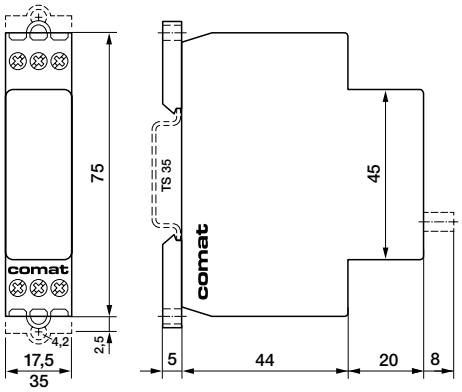


CE c UL us

17,5 mm
time delay relay system
in compact design.
Suited for snap-on installation in accordance with DIN 43 880.

	AM1	AM2	AM3
	Economy time delay and blinker relay on delay, one shot leading edge. 2 blinker functions. Output-LED.	**Universal time delay relay** on delay, off delay, one shot leading edge, pulse shaping K, voltage controlled. Output-LED.	**Universal time delay relay with instantaneous contact** or both contacts delayed (programmable). Functions like type AM2. Display of control input B1 (S) in addition to the output-LED.
E 1 Triggering Function → page 3	E W B B2 1	E 2 3 A K 2 W 3	E 2 3 A K 2 W 3
Time range Partial ranges	**0,5 s - 60 min** 0,5 - 6 s ... 5 - 60 min	**0,5 s - 60 min** 0,5 - 6 s ... 5 - 60 min	**0,5 s - 60 min** 0,5 - 6 s ... 5 - 60 min
Triggering			R2=S R2=R (25-26-28) 
~ AC 50/60 Hz	UC110-240 V UC24-60 V	AC220-240 V AC110-127 V UC24-60 V	AC220-240 V UC24-60 V, UC110-127 V
Ordering no. →	AM1 / V	AM2 / V	AM3 / V

Example of order:
Time delay relay AM2/UC24-60 V

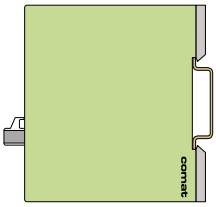


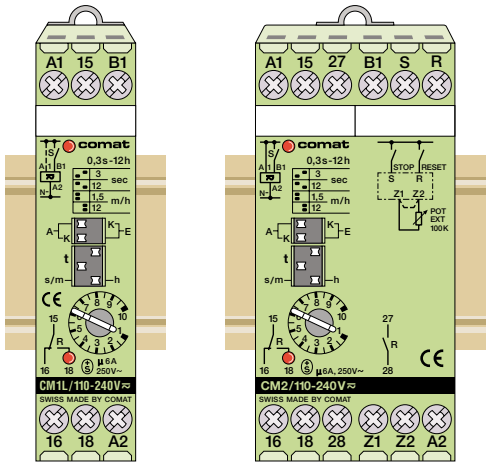
comat

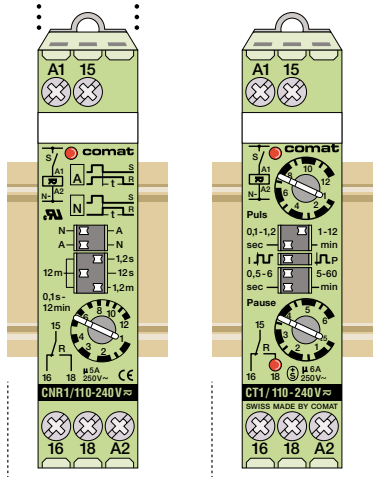
Multifunctional time delay relays

DIN C

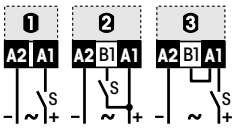
17,5

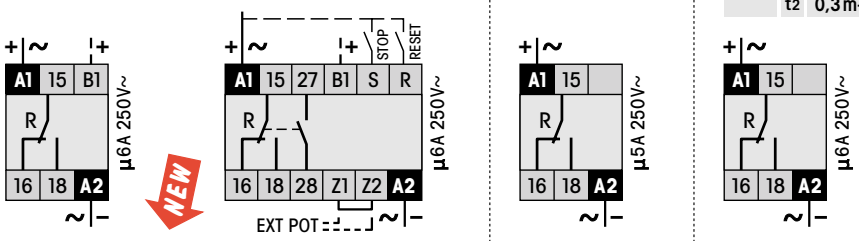




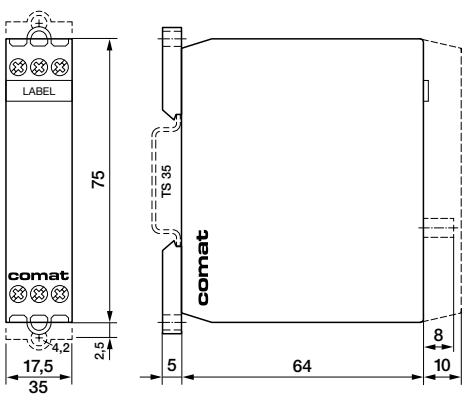


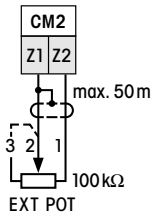
CE c UL us

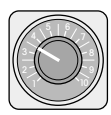
	CM1 CM1L	CM2	CNR1	CT1 CT1L
17,5 mm time delay relay system in compact design. (For snap-on installation in accordance with DIN 43 880, see series DIN A and C13.)	**Universal time delay relay** on delay, off delay, one shot leading edge, pulse shaping K, voltage controlled, LED for B1 and R.	**Universal time delay relay** like type CM1, but with time stop and reset input as well as connection for remote potentiometer 100 k. 2 heavy current contacts.	**Time delay relay, no auxiliary voltage** Function runs after cut off power supply. Minimum triggering time 150 ms only.	**Universal repeat cycle timer** pulse or pause start, t1/t2 separately settable. LED for A1 and R.
E-1 Triggering Function → page 3	E-2 3 A K-2 W-3	E-2 3 A K-2 W-3	A N-1 no auxiliary voltage	I P-1
Time range Partial ranges	CM1 50 ms-100 m CM1L 0,3 s-12 h	0,3 s-12 h 0,3-3 s...1,2-12 h	0,1-1,2 s... 1-12 min	CT1 t1 0,1 s-12 m t2 0,5 s-60 m CT1L t1 0,5 s-60 m t2 0,3 m-30 h
Triggering				
≂ UC AC/DC	UC110-240 V — 16 2/3... 60 Hz UC24-60 V	UC110-240 V UC24-60 V	UC110-240 V UC24-60 V	UC110-240 V UC24-60 V
▮▮▮▮▮▮ Ordering no. ➡	CM1 / ....V CM1L / V	CM2 / V	CNR1 / V	CT1 / ....V CT1L / V



Example of order:
Time delay relay CM2 / UC110-240 V





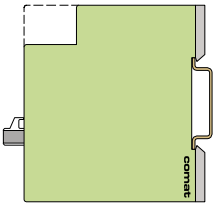


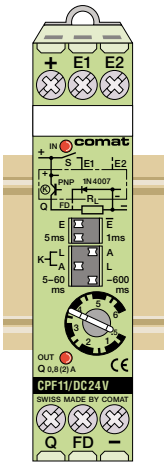
Built-in potentiometer SP-01/100 k (page 19)

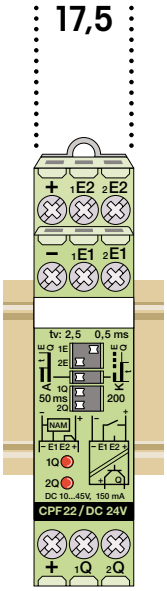
comat

Pulse shapers

CPF



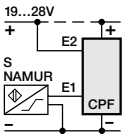




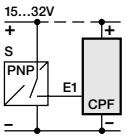
CE c UL us

CPF pulse shapers
with the timing functions K, L and A are specialist devices for the lengthening or the limitation of control pulses.
In this fully electronic design with the facility for also connecting NAMUR sensors they are the ideal interface modules in modern control systems.
Always there where fast processes, high rotations, i.e. the briefest pulses, are to be evaluated, the cost-effective solution is:
CPF Pulse shapers.

NAMUR sensor



Three-wire sensor



DC 10%

Ordering no.

CPF11

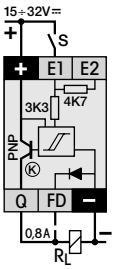
Single channel pulse shaper
- Input reversible (E-Ē)
- Input and output times separately settable
- 3(6) functions to choose
- Additional free wheel diode 1A
- LED display for E and Q

Function → page 3

K L A W

Settable times:

input pulse	output pulse
≥1/5 ms	5÷600 ms



DC 24 V

CPF11 / V

CPF22

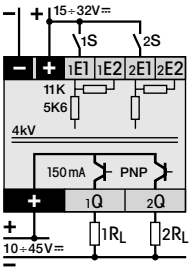
Double channel pulse shaper
- Input/output galvanically isolated 4kV
- Input and output times separately settable
- 2 functions to choose
- LED output display for each channel

Function → page 3

K A

Settable times:

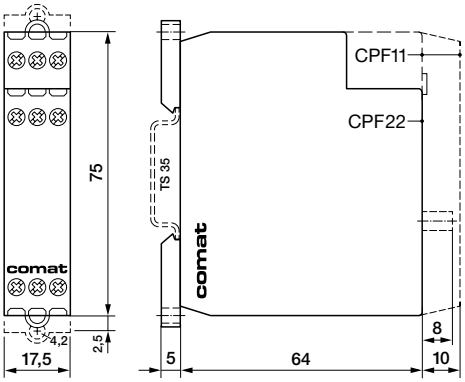
input pulse	output pulse
≥0,5/2,5 ms	50/200 ms



DC 24 V

CPF22 / V

Example of order:
Pulse shaper CPF11/DC24V



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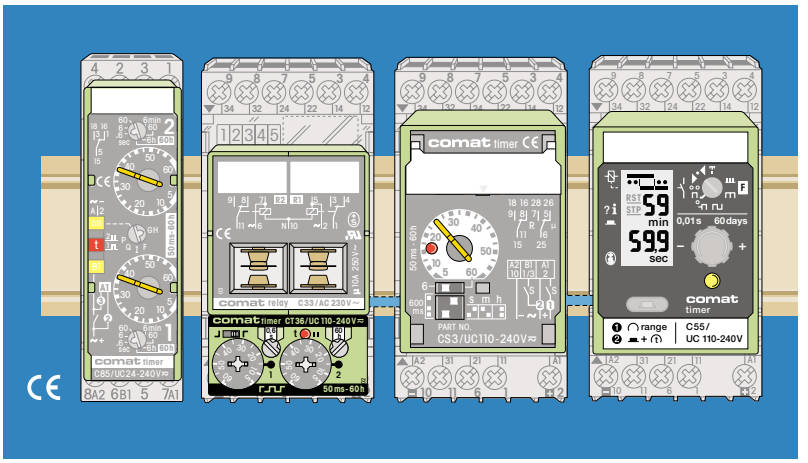


Plug-in
Time delay relays
Time cubes®

C80 CT.. CS.. C60 C50

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

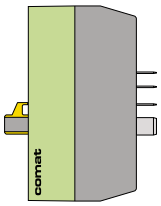
Kühn Controls SL. , Gräfenhäuser Str. 14 , D-75305 Neuenbürg , Germany , Tel.: +49-(0)7082-940000, Fax: +49-(0)7082-940001, email: sales@kuehn-controls.de

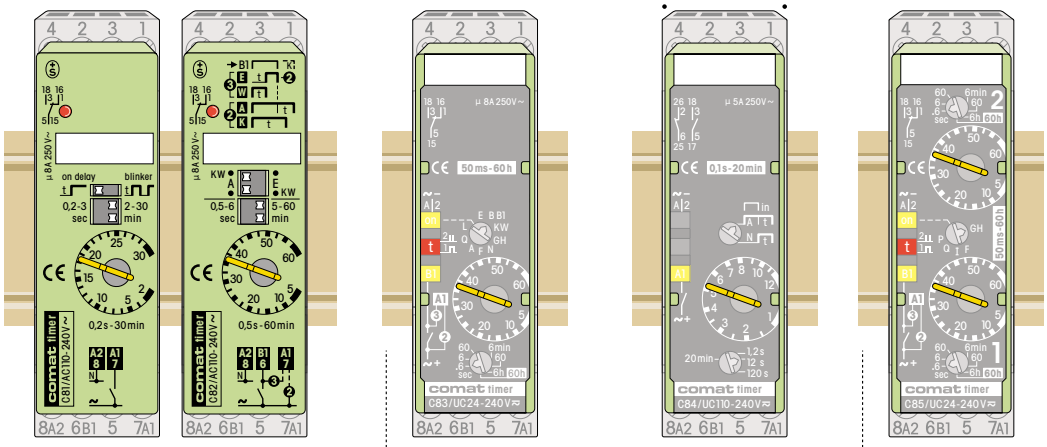
comat

Multifunctional time delay relays

C80

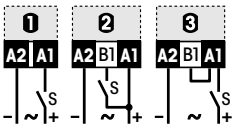
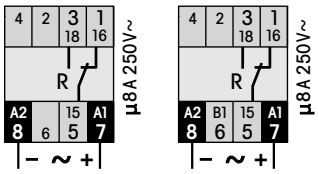
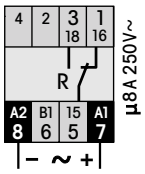
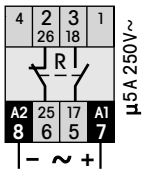
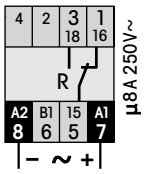
22,5





CE c UL us

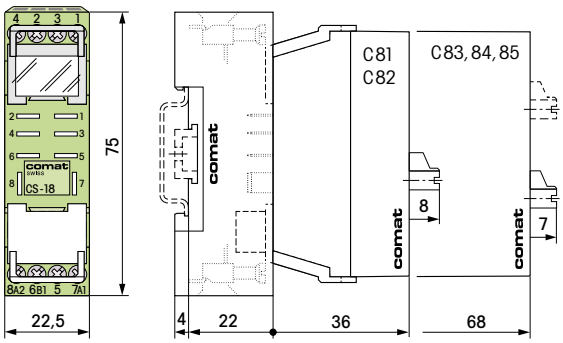
22,5 mm plug-in time delay relay system
for all delay, shot timing and blinking functions. Double functions, repeat cycle timing and functions without auxiliary voltage.

	C81	C82	C83	C84	C85
	Economy time delay relay on delay or blinking, voltage controlled, output-LED.	**Economy time delay relay** on delay, off delay, one shot leading edge, pulse shaping K, voltage controlled, output-LED.	**Universal multifunctional time delay relay** • 12 functions + ON (Test), voltage controlled. • Time lapse display (double blinking = t2) • Input-LED (24-240 V) • Output-LED	**Time delay relay, no auxiliary voltage** • Off delay • One shot trailing edge • Triggering display • Minimum triggering time 150 ms only	**Double time delay relay and repeat cycle timer** • 6 functions + test • t1/t2 separately settable • Time lapse display (double blinking = t2) • Input-LED (24-240 V) • Ouput-LED
E 1 Triggering Function → page 3	E B2 1	E 2 3 A K 2 W 3	E 2 3 W H B 3 2 A N L F K G B1 Q	A N 1 no auxiliary voltage	I P 2 3 F Q G 2 H 3
Time range ✶ TF60 setting → page 4	**0,2 s - 30 min** 0,2-3 s ... 2-30 min	**0,5 s - 60 min** 0,5-6 s ... 5-60 min	**50 ms - 60 h** ✶ 50-600 ms ... 5-60 h	**0,1 s - 20 min** 0,1-1,2 s ... 1,7-20 min	**2 x 50 ms - 60 h** ✶ 2 x 50-600 ms ... 5-60 h
Triggering					
					
~ AC 50/60 Hz	AC 110-240 V UC 24-48 V		AC 115 V, AC 230 V UC 24 V, UC 24-240 V	UC 24-48 V UC 110-240 V	AC 115 V, AC 230 V UC 24 V, UC 24-240 V
≂ UC AC/DC					
Ordering no. →	C81 / V	C82 / V	C83 / V	C84 / V	C85 / V

Example of order:
Time delay relay C83/UC 24-240 V
System socket CS-18

F Q t2 = t1 G H t2 = 0,5 s

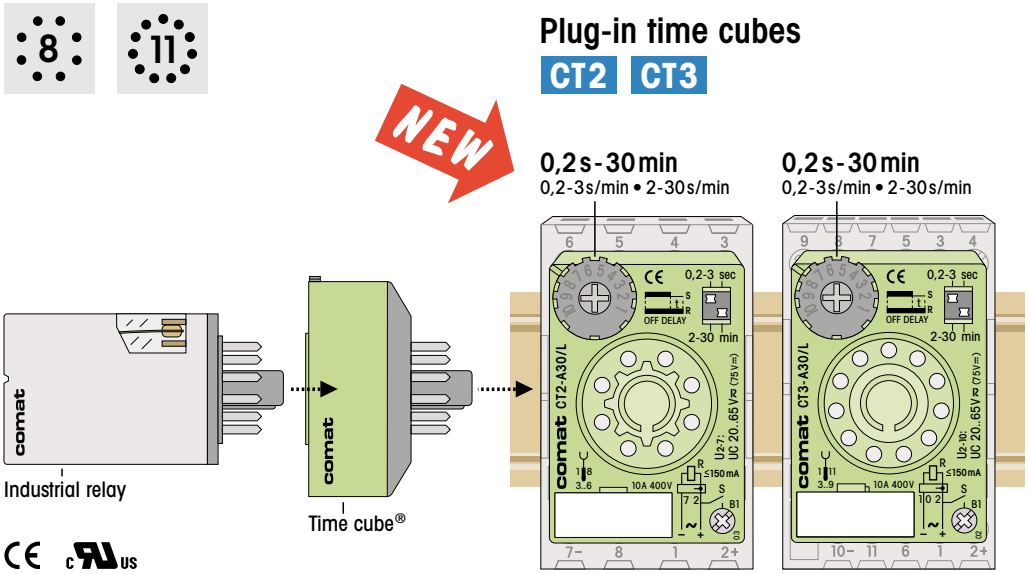
System socket CS-18
Figure: with inserted retaining clips (standard delivery)



comat

Plug-in time cubes

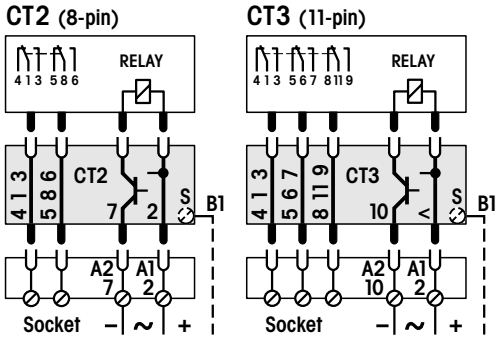
CT2 CT3

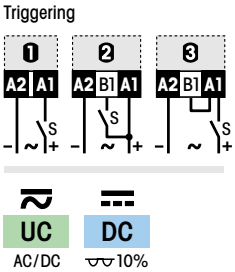


8-/11-pole plug-in time delay relay system

The simplest time delay relay system world-wide, fitting all 8 or 11-pin relay sockets (octal/sub-magnalite).
Original time cubes® are simply placed between socket and relay without rewiring.
In this way, even as a retrofit, all industrial relays can be provided with the required timing functions without additional space being required. The contact connections of the relay on the socket remain through-connected.

All new types ..30 (0,2 s-30 min) are fully compatible with all previous types ..20, ..21 and ..25.

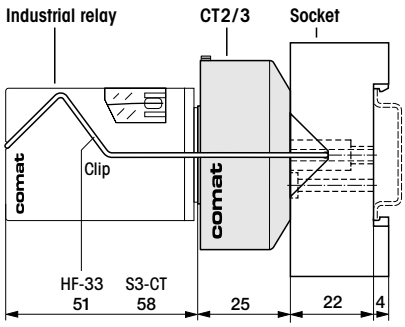


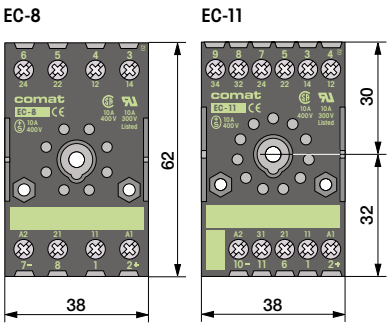


Function → page 3 / Triggering	Order no. (2 = 8-pole, 3 = 11-pole)	UC180-265 V	UC90-150 V	UC90-265 V	UC20-65 V	DC9,5-18 V
E 1	CT..-E30/...	—	—	H	L	S
A 2	CT..-A30/...	U	M	—	L	S
K 2 W 3	CT..-K30/...	U	M	—	L	S
W 1	CT..-W30/...	—	—	H	L	S
B 1	CT..-B30/...	—	—	H	L	S

Example of order:
Time cube CT3-E30/H
Socket EC-11

Relay 11-pole
(→ prospectus "Industrial relays")

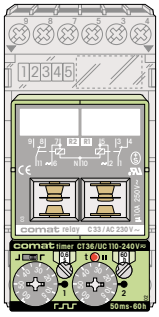




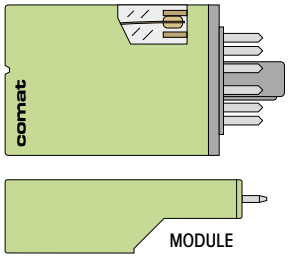
comat

Multifunction time delay relays, modular

CT



The Comat CT System is modular.
The time delay relays and monitoring relays consist of the plug-in CT electronic module and an 11-pole CT output relay. Both system components can be combined freely with one another. This allows the equipment to be selected optimally for specific use.
Subsequent modifications, for example a change from mechanical contacts to solid-state outputs, are possible at any time by simple reconnection.
This provides the user a complete, universal system, the high flexibility of which is unique throughout the world.



The system socket C12BO serves as a basis for the vibration-free reception of the electronic module. It has a 4-pole module slot in which the CT-module –also without output relay– locks in such a way that it is vibration-free. Contact is via twin knife contacts which ensure optimal contact reliability.

With the A2-connector C-A2 plug-in flush in the socket, the neutral conductor (N / –) can be connected as a 10A bus from socket to socket. This considerably reduces wiring work.

Robust terminals for cross-sections up to 4mm² and generous labelling facilities are other advantages of this practical comat system socket. As variants to the standard socket C12BO, two identical sockets, but with printed device diagram, are available (C12B1/2). By clearly identifying the connections, these sockets ensure rapid, error-free and therefore economical wiring. When a service is required, they faciliate fault location.

The CT module demonstrates comat's practical experience in the area of industrial electronics. All control and display elements are arranged on the front and are labelled in a self-explanatory manner for international use. The values set are also clearly legible when the module has been installed.

Printed diagrams explain the functions, and the connection scheme directly indicates the appropriate terminals in the system socket.

A transparent front cover provides protection from unauthorized misadjustment and additionally locks the module onto the output relay.

Triggering is performed with the operating voltage (L1 or +). Hence, no potential-free contacts are required. Triggering complies with the machine standards. A parallel connection of other users to B1 is admissible.

The 2 voltage ranges UC110-240V and UC24-48V have been chosen by comat to ensure a high level of reliability in triggering. They permit use with an AC or DC supply and optimal adaptation to the operating conditions of modern controls.

In case of an even broader voltage range, e.g. 24-240V it is often possible to achieve only currents of a few 100µA in the trigger circuit B1 with simultaneous low threshold voltages to less than 20V. This may lead to unintentional triggering due to capacitive/inductive pickups, or faulty switching may occur owing to sufficiently loaded control contacts. During operation, 50V are readily measured on open-ended lines.

The consumption of the CT modules comes to less than 1W.

The output relays have the complete device diagram, the performance data and the complete order no. on the front, supported by a colour code, which indicates an AC coil with red and a DC coil with blue. The .1 and .2 relays have a safety manual operation facility as a standard feature, which switches the contacts only after a lock has been released (two-hand principle).

The standard contacts .1 and .3 have proved their worth millions of times in heavy current applications. The contact material AgNi permits a large switching range and thanks to generous dimensioning achieves a high number of cycles. With its high breaking capacity of up to 10A/400V, this contact is a reliable allround contact for use both in mains circuits and in the lower voltage range from 12V/10mA.

The twin contacts .2 and .4 switch every circuit with two independent reeds. Compared with single contacts, they provide up to 100 times greater safety with regard to the level of possible faulty switchings. In spite of their high breaking capacity of up to 6A/250V, these contacts are particularly suitable for low switching currents and switching voltages down to 1mA/6V.

The solid-state relays are used instead of mechanical contacts. In the standard version .5, the relay has a potential-free output which switches an AC or DC load in the same way as a mechanical contact. However, it functions without bounce or wear, withstands overloads, has short-circuit protection and has a practically unlimited life even with full output load.

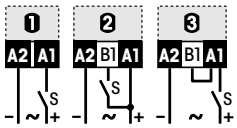
Preferred applications are high switching frequency, for example as repeat cycle timers, flashing bars with bulb load or extreme inductive loads, for example large solenoid valves, couplings, motors, etc.

An additional protective wiring of the output or of the load is not necessary in these comat relays for any application.

They are completely insensitive in an aggressive atmosphere, for example in the chemical industry, in waste water treatment plants, etc.

CE c UL us

Triggering



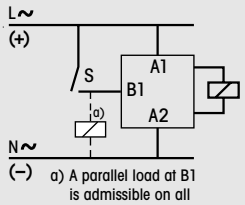
Timer module		Function/triggering	Time range
CT30	**Economy timer** 3 functions, voltage controlled, output LED.	E W B-1	**0,25s-30min** 0,25-3s... 2,5-30min
CT32	**Universal timer** 7 functions, voltage controlled, time lapse display, blinking.	E-2-3 A N K B1-2 W B-3	**0,15s-60min** 0,15-1,5s... 6-60min ✶
CT33	**Universal timer** 12 functions, voltage controlled, time lapse display, blinking, high setting accuracy by dial graduation 1:5.	E-2-3 2 A N L F K G B1 Q W H B-3	**30ms-60h** 30-150ms... 12-60h ✶
CT36	**Universal repeat cycle timer** Pulse or pause start. t1/t2 separately settable. Time lapse display t1/t2.	I P-1	**2x 50ms-60h** 2x 50-600ms... 5-60h ✶

F Q t2=t1 G H t2=0,5s

✶ TF60 setting → page 3

Note on use

According to the standards «Safety of machines» e.g. EN 60204-1, EN 292-2, triggering with A2-potential (N/–) is only admissible in exceptional cirumstances.
For that reason the comat CT modules are triggered by A1-potential (L/+).
This makes them unrestrictedly suitable also for use in machines and systems which must conform with machine or CE guidelines or directives.



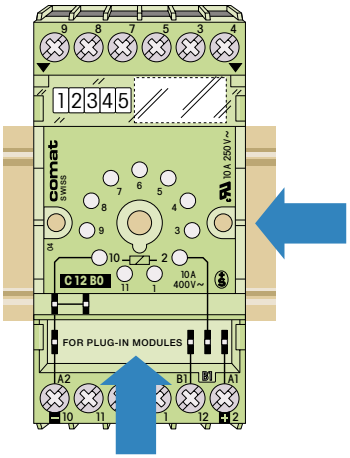
a) A parallel load at B1 is admissible on all CT30 modules.

Order no. for individual module (without output relay):

UC110-240V	UC115V, UC230V	UC115V, UC230V	UC110-240V
UC 24-48V	UC 24-48V	UC 24-48V	UC 24-48V
CT30 / V	CT32 / V	CT33 / V	CT36 / V

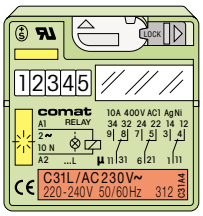
comat

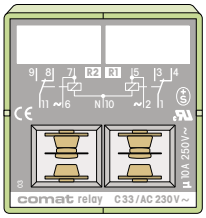
Time delay relay assembled (module + output relay)



MODULE

Contact outputs



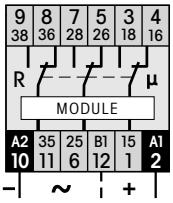


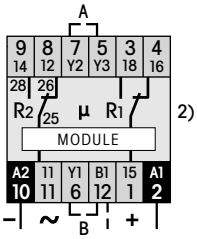
.1

3 changeover contacts
10 A 400 V~ 1)

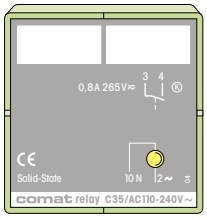
.3

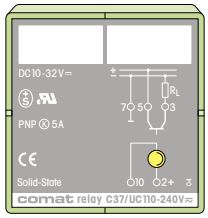
2x1 changeover contacts
(with instantan.contact)
10 A 250 V~ 2)





Solid-state outputs



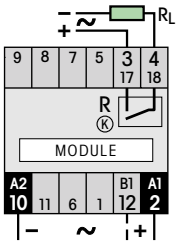


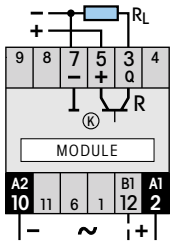
.5

Solid-state output
for AC or DC load
0,8 A 10-265 V≈

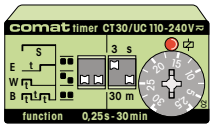
.7

Solid-state output
for DC load
5 A 10-30 V⎓

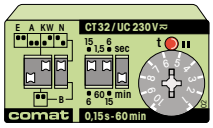




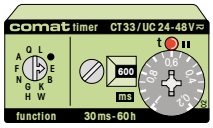
Order no. for module + ouput relay (delivery unit):



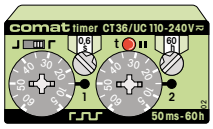
Order no. ➡ **AC 24, 48, 115, 230 V** / **DC 24, 48, 110, 220 V** → **CT30.1/....V** ➡ **AC 24, 48, 115, 230 V** / **DC 24, 48, 110 V** → **CT30.3/....V** ➡ **AC 110-240 V** / **UC 24-48 V** → **CT30.5/....V** ➡ **UC 110-240 V** / **UC 24-48 V** → **CT30.7/....V**



Order no. ➡ **CT32.1/....V** ➡ **CT32.3/....V** ➡ **AC 115, 230 V** / **UC 24-48 V** → **CT32.5/....V** ➡ **CT32.7/....V**



Order no. ➡ **CT33.1/....V** ➡ **CT33.3/....V** ➡ **CT33.5/....V** ➡ **CT33.7/....V**

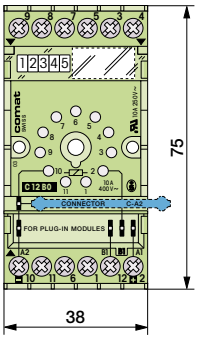


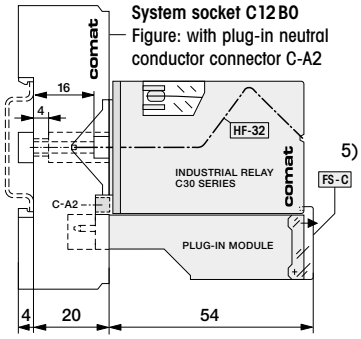
Order no. ➡ **CT36.1/....V** ➡ **CT36.3/....V** ➡ **AC 110-240 V** / **UC 24-48 V** → **CT36.5/....V** ➡ **CT36.7/....V**

Example of order:
Timer CT32.1/AC230V
System socket C12B0

A Jumper 5-7 : R2 = R1
B Jumper 6-12 : R2 = S

~	≈	⎓
AC	UC	DC
50/60 Hz	AC/DC	∿∿ 10%





1) Same relay, but with twin contacts 6 A 250 V~ order no. CT...2/...V
2) Same relay, but with twin contacts 5 A 250 V~ order no. CT...4/...V
3) To module CT30 (without output LED)
4) To module CT32÷36 (L=with output LED)
5) For relay made by **Releco** (instead of C31/32, or CT...1/.2): Retaining clip **S3-C** Front cover **FS-R**

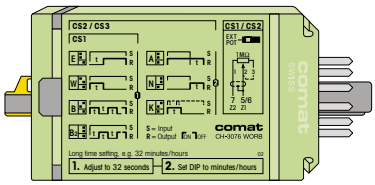
Order no. for individual ouput relay (without module):

AC 24, 48, 115, 230 V	**AC 24, 48, 115, 230 V**	**AC 110-240 V**	**UC 110-240 V**
DC 24, 48, 110, 220 V	**DC 24, 48, 110, 220 V**	**UC 24-48 V**	**UC 24-48 V**
C31/....V3) **C31L/....V**4)	**C33/....V**	**C35/....V**	**C37/....V**

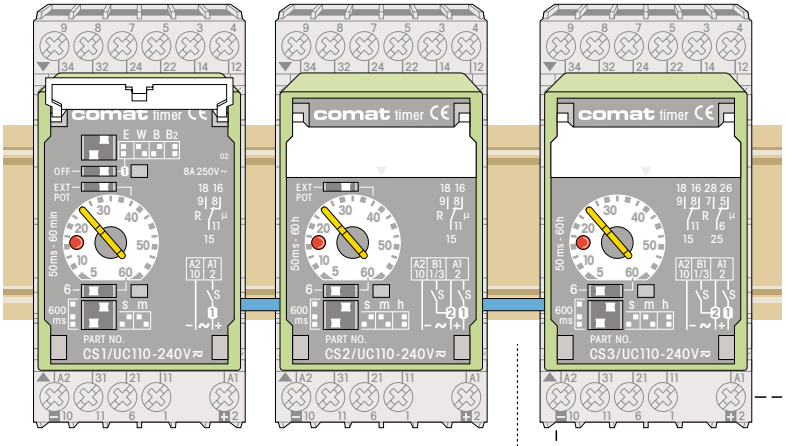
comat

Multifunctional time delay relays

CS C60



Dimensions, accessories → page 19

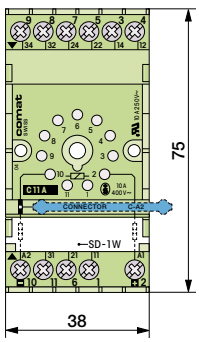


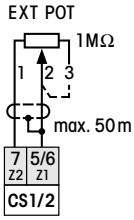
11-pole plug-in time delay relay system
for all delay, shot timing and blinking functions from 50 ms up to 60 hours.
CS1, CS2 with connection for remote potentiometer. Front panel mounting with FZ-50.

	CS1	CS2	CS3 (2nd contact: 6-5-7)	C63 (2nd contact: 1-4-3)
	Economy time delay and blinker relay With additional connection for remote potentiometer SP-01/1M (up to 50 m). Replaces fullay compatible CSE2, CSB2	**Universal multifunctional time delay relay** like CS1, but with 7 functions and delay times up to 60 hours. Replaces fullay compatible CSA2, CSK2, CSN2	**Universal multifunctional time delay relay** like CS2, but with 2nd contact instead of Z1-Z2 (terminal 6-5-7). Replaces fullay compatible CSE3, CSA3	**Universal multifunctional time delay relay** like CS3, but with 2nd contact on terminal 1-4-3. Replaces fullay compatible CX35, CX36
E ❶ Triggering Function → page 3	E W B B2 ❶	E W B B2 ❶ A K N ❷	E W B B2 ❶ A K N ❷	E W B B2 ❶ A K N ❷
Time range ✶ TF60 setting → page 4	**50 ms-60 min✶** 50-600 ms...5-60 min	**50 ms-60 h✶** 50-600 ms...5-60 h	**50 ms-60 h✶** 50-600 ms...5-60 h	**50 ms-60 h✶** 50-600 ms...5-60 h
Triggering	EXT POT 9 8 7 5 3 4 18 16 Z2 Z1 R A2 15 Z1 A1 10 11 6 1 2 µ8A 250V~ – ~ +	EXT POT 9 8 7 5 3 4 18 16 Z2 Z1 B1 R A2 15 Z1 B1 A1 10 11 6 1 2 µ8A 250V~ – ~ +	2nd contact: 6-5-7 9 8 7 5 3 4 18 16 28 26 B1 R A2 15 25 B1 A1 10 11 6 1 2 µ6A 250V~ – ~ +	2nd contact: 1-4-3 9 8 7 5 3 4 28 26 B1 18 16 R A2 25 B1 15 A1 10 11 6 1 2 µ6A 250V~ – ~ +
≂ UC AC/DC	UC110-240 V UC24-60 V	UC110-240 V UC12-15 V, UC24-60 V	UC110-240 V UC12-15 V, UC24-60 V	UC110-240 V UC12-15 V, UC24-60 V
Ordering no. →	CS1 / V	CS2 / V	CS3 / V	C63 / V

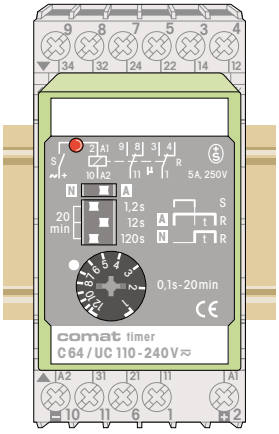
Example of order:
Time delay relay CS2/UC110-240 V
System socket C11A

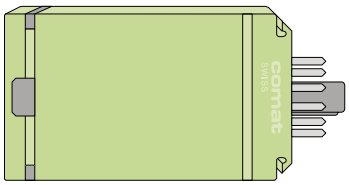
System socket C11A
Figure: with plug-in neutral conductor connector C-A2 (standard delivery).



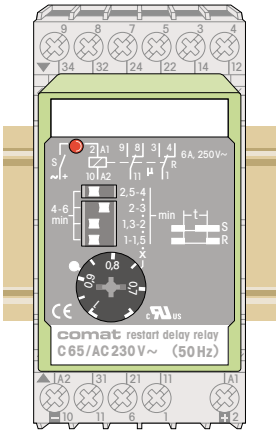


Built-in potentiometer SP-01/1M (page 19)





Dimensions, accessories → page 19



NEW

C64

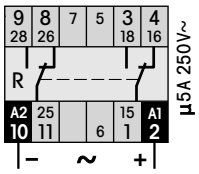
Time delay relay without auxiliary voltage
True off delay or one shot trailing edge after cut off power supply.
Minimum triggering time 150 ms only.

Replaces RS124, CSR2

A N ❶
without auxiliary voltage

0,1 s-20 min
0,1-1,2 s ... 1,7-20 min

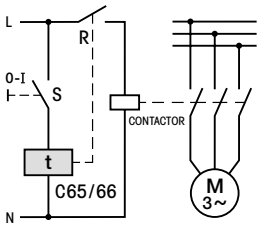
Do not connect 5-6-7!



UC110-240 V
UC24-60 V

C64 / V

Example of order:
Time delay relay C64/UC110-240 V
System socket C11A



Function → page 3
❶ Triggering

Time range
Partial ranges

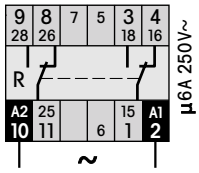
Triggering

Ordering no. ➡

C65 (50 Hz) C66 (60 Hz)

Restart delay relay
The C65 (50 Hz) and C66 (60 Hz) are special timers with no auxiliary voltage to guarantee a minimum OFF time after removal of supply. After the interrup-tion of supply, the device will not reclose before the set time (1-6 mins.) has elapsed, even if there has been a new command to switch ON.
Typical application:
After a mains failure it is not possible to restart (close contacts) before the machine is at rest. Example: Motor (see diagram on the left).

1-6 min
1-1,5 ... 4-6 min



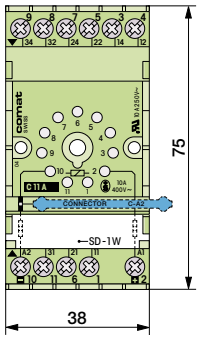
~ 50 Hz
AC115 V, AC230 V

~ 60 Hz
AC115 V, AC230 V

C65 / ....V **C66 / ....V**

Example of order:
Time delay relay C65/UC110-240 V
System socket C11A

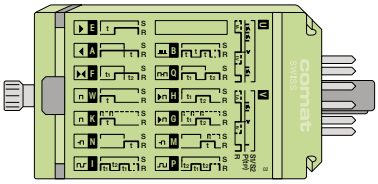
System socket C11A
Figure: with plug-in neutral conductor connector C-A2 (standard delivery).



comat

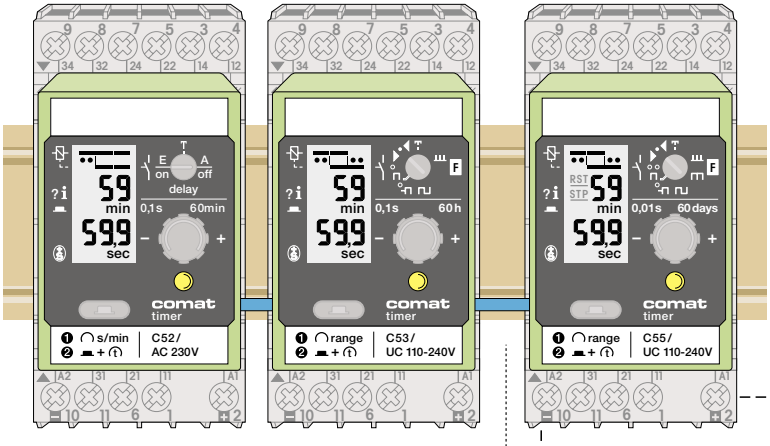
Multifunctional time delay relays

C50



Dimensions, accessories → page 19

CE c UL us GL (C53, C55, C56)

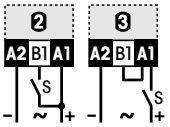


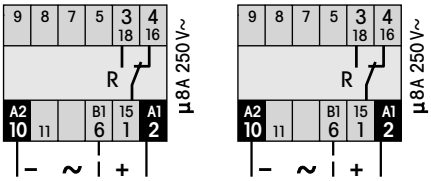
NEW

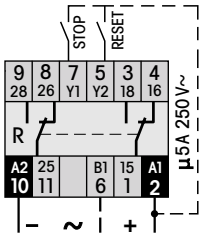
11-pole plug-in time delay relay system
for all timing modes from 10 ms up to 60 days. Extremly accurate owing to quartz time base. Digital functions and residual time display. Front panel mounting with FZ-50. Test function T.

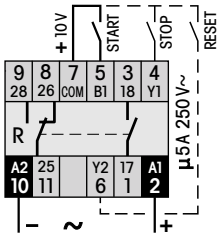
	C52	C53	C55	C56
	Universal multifunctional time delay relay • 2 functions • 0.1 s-60 min (quartz) • 1 power changeover contact	**Universal multifunctional time delay relay** • 10 functions • 0.1 s-60 h (quartz) • 1 power changeover contact • Alternatively solid-state output .3 or .4	**Universal multifunctional time delay relay** • 15 functions including U / V • 0.01 s-60 days (quartz) • Setting step up to 60 s : 1 ms • Time STOP and RESET input • 2 changeover contacts • Alternatively solid-state output .3 or .4	**Universal multifunctional time delay relay** like type C55, but with potential free triggering of START, STOP and RESET (insulation from 2-10: 2 kV).
E – 1 Triggering Function → page 3	E – 2 3 A – 2	E W H B I – 2 3 A K N F Q – 2	E W H B I P – 2 3 A K N M G F Q – 2	E W H B I P A K N M G F Q
Time range Partial ranges	0,1 s-60 min	0,1 s-60 h 0,1 s-60 min ... 0,1 min-60 h	0,01 s-60 days 0,01-60 s ... 0,1 h-60 days	0,01 s-60 days 0,01-60 s ... 0,1 h-60 days

Triggering C52, C53, C55



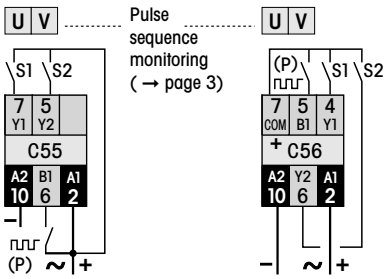




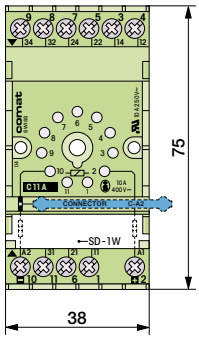


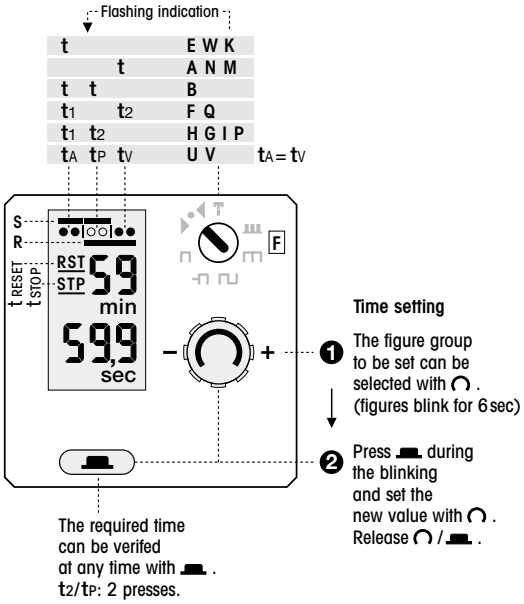
~ AC 50/60 Hz	≂ UC AC/DC	⎓ DC ∿∿10%	
AC 110-120 V, AC 230 V	UC 110-240 V	UC 110-240 V	UC 110-240 V
UC 24 V	UC 24-60 V	UC 24-60 V	UC 24-60 V
Ordering no. → C52 / V	C53 / V	C55 / V	C56 / V

Example of order:
Time delay relay C53/UC110-240 V
System socket C11A



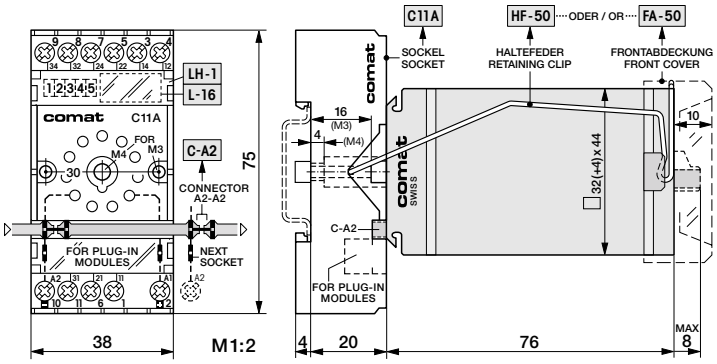
System socket C11A
Figure: with plug-in neutral conductor connector C-A2 (standard delivery).



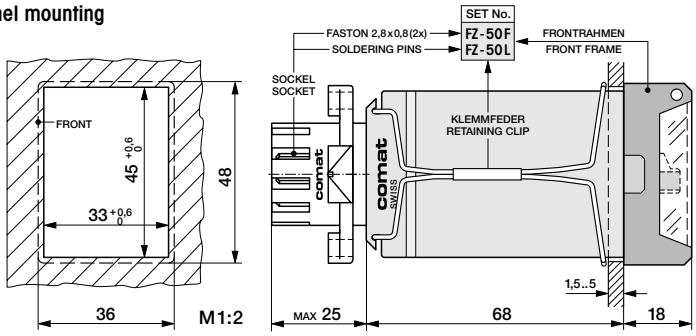


Accessories for the series CS, C50, C60

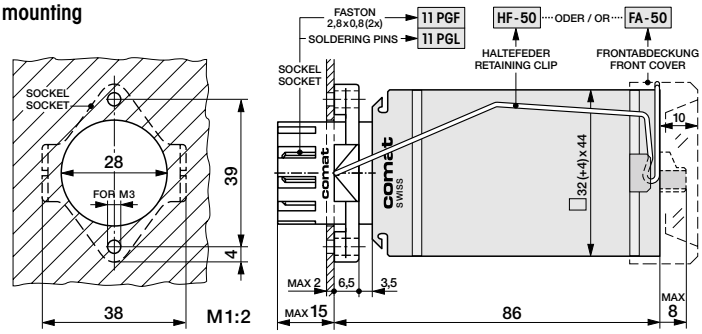
DIN-rail or screw mounting



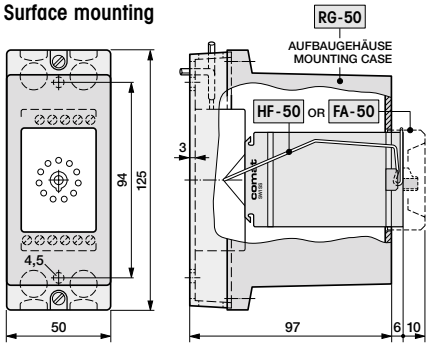
Front panel mounting



Chassis mounting



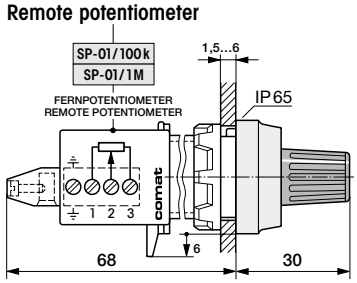
Surface mounting

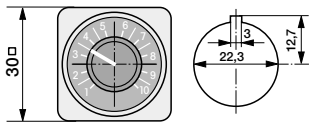


C11A	**Relay socket** 11-pole screw terminals 4 mm²
with:	**C-A2 connector (A2-A2)** 10 A insulated, blue[1]
	LH-1 Marking labels support for L-16, transparent[1]
	L-16 Marking strip paper, white[1]
11 PGF	**Relay socket** 11-pole faston terminals 0,8 mm
11 PGL	**Relay socket** 11-pole soldered terminals
HF-50	**Retaining clip**[2] suitable to C11A, 11 PGF, 11 PGL, RG-50
FZ-...	**Front frame set** comprises front frame, retaining clip and socket
FZ-50 F	with faston terminals
FZ-50 L	with soldered terminals
FA-50	**Front cover** with transparent cover[3]
RG-50	**Mounting case** with integrated relay socket
SP-01..	**Remote potentiometer** with connection terminals SP-01/100k, SP-01/1M

[1] Packing units
[2] Not to be used with FA-50
[3] Not to be used with HF-50

Remote potentiometer

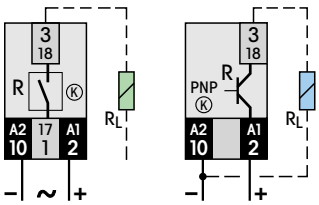




Solid-state output for C53, C55 (instead of contact)

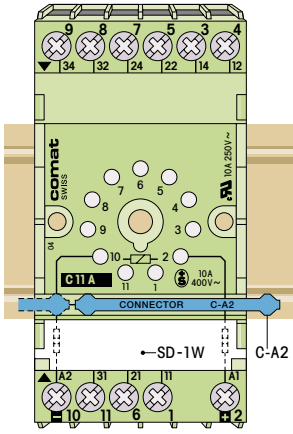
For AC or DC load
0,5 A 10-265 V ≈

For DC load
2 A 24 V ⎓



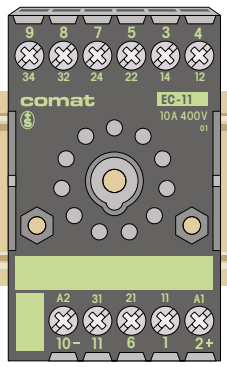
UC110-240 V	
UC24-60 V	DC24 V
C53.3 / ...V	C53.4 / ...V
C55.3 / ...V	C55.4 / ...V

Socket overview



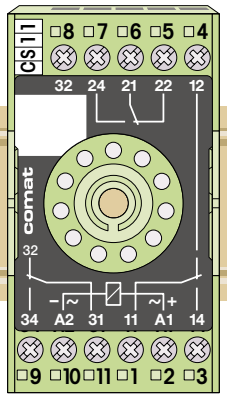
C11A

System socket 11-pole, with white cover and plug-in connector C-A2. (standard delivery).



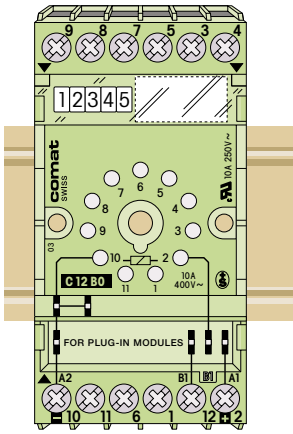
EC-8
EC-11

Economy socket 8-/11-pole



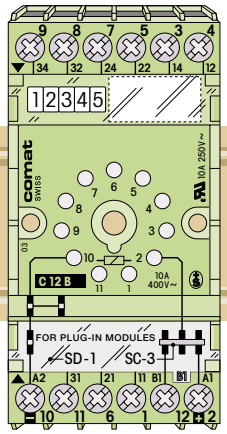
CS-8
CS-11

Economy socket 8-/11-pole



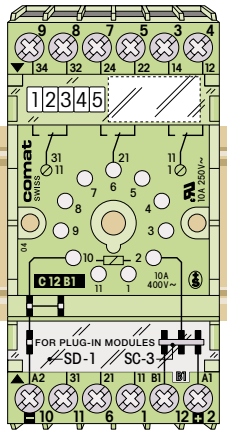
C12B0

System socket 11-pole, similar to C12B. Prepared for CT system (without SC-3, SD-1).



C12B

System socket 11-pole, 12 terminals (+B1). SC-3 inserted for B1-2-A1. Cover transparent.



C12B1

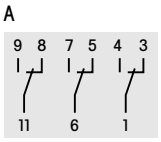
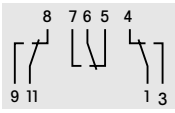
System socket 11-pole, like C12B, but with imprinted contact diagram.

Socket	For type of device			Connection layout
	CT3 CS.. C50 C60	CT30 ... 36	CT2	
C11A	●			A
EC-11	●			A
CS-11	○			B
C12B0		●		A
C12B	○	○		A
C12B1	○	○		A
EC-8			●	
CS-8			○	

● recommended
○ usable

Connection layout (from left to right side)

A



B