2.5 Time Modules



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.

comat RELECO
WORLD OF RELAYS

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 mm^2 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 EN 50155.
Please refer to our special railway brochure for details.

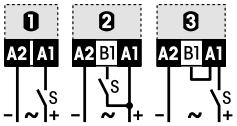
This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

Type **CT30, CT32, CT33, CT36, /...V R**



Plug-in time modules for sockets with module slot in combination with 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 152)



	CT30 Economy	CT32 Universal	CT33 Universal	CT36 Repeat cycle timer
	E W B 1	E 2 3 A N K B1 2 W B 3	E 2 3 A N L F K G B1 Q W H B 3 2	I P 1

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 1.5, 6, 15, 60 /s /min /h	2 x 600 ms 2 x 6, 60 /s /min /h
Min. time t_{min}	0.25 s	0.15 s	30 ms	2 x 50 ms
Fine adj. range t_{min} … t_{max}	2.5 … 30	1 … 1 0	0.2 … 1	2 x 5 … 60
Time range tolerance t_{min}	-25 … 0 %	-25 … 0 %	-25 … 0 %	-25 … 0 %
t_{max}	0 … 35 %	0 … 25 %	0 … 25 %	0 … 25 %
Repetition accuracy	± 0.2 % or 20 ms	± 0.2 % or 20 ms	± 0.2 % or 20 ms	± 0.2 % or 20 ms
Temperature drift of time	0.25 % / K	0.1 % / K	0.1 % / K	0.1 % / K
Min. trigger pulse width B1	-	≥ 30 ms	≥ 30 ms	-
Reset time pow. supply	≤ 200 ms	≤ 150 ms	≤ 150 ms	≤ 150 ms
Voltage failure buffering	≥ 20 ms	≥ 20 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	≤ 25 Ω	≤ 100 Ω
Leakage current	≤ 150 µA	≤ 150 µA

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

Type	CT 30	CT 30	CT36	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

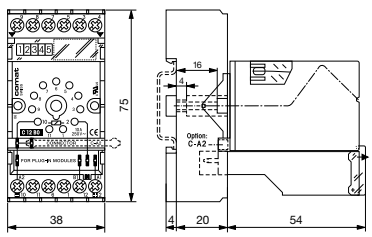
Ambient temperature storage /operation	-40 … 85 °C / -40 … 60 °C
Ingress Protection degree	IP 40 when plugged in
Housing material	Lexan
Weight	25 g

Standard types

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

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

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WORLD OF RELAYS

11

Time Delay Relay-Set
Relay, Module and Socket



Relay data's see:
Section industrial Relays

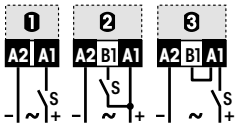
CE

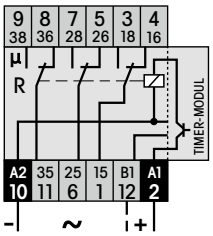
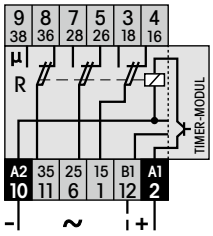
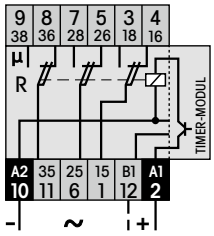
MAX
μ MIN

Timer-Modul (Function diagrams: refer to page 152)

E 1 Triggering
Function see page 152

R2(R3) = Time function as R1
R2(R3) = Instantaneous contact



	Power Relay	Control Relay	Signal Relay
			10μAu
			
	C3-A30X	**C3-T31X**	**C3-T32X**
	Universal Power Relay 10A. With 3 power changeover-contacts this is the robust relay for AC and DC circuits ranging from 10mA 10V.	**Relay with 3 twin contacts 6A** The control relay with highest switching reliablility for control and signal circuits ranging from 5mA 5V.	**Relay with 3 twin contacts, 10μ gold flush** The twin contact relay with highest switching reliability for signal circuits ranging from 1mA 5V. Recommend. upto 0,2A 30V.
	10A~	**6A** 250V~	**6A** 250V~
	10mA 10V	5mA 5V	1mA 5V
			
CT30 Economy timer	3 functions, voltage controlled, output LED. Seismic approved.		
			
Function / Triggering	E W B 1		
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	CT30.3-T31/…V R AC 24, 48, 115, 230V DC24, 48, 110, 220V	CT30.3-T32/…V R AC 24, 48, 115, 230V DC 24, 48, 110, 220V
Delivery includes:	• Relay C3-A30X/…V R • Module CT30/…V R • Front cover FS-R • Socket C12B0 R • Retaining clip S3-C	• Relay C3-T31X/…V R • Module CT30/...V R • Front cover FS-R • Socket C12B0 R • Retaining clip S3-C	• Relay C3-T32X/…V R • 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	E 2 3 A N K B1 2 W B 3		
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	CT32.3-T31/…V R AC 24, 48, 115, 230V DC 24, 48, 110, 220V	CT32.3-T32/…V R AC 24, 48, 115, 230V DC 24, 48, 110, 220V
Delivery includes:	• Relay C3-A30X/…V R • Module CT32/…V R • Front cover FS-R • Socket C12B0 R • Retaining clip S3-C	• Relay C3-T31X/…V R • Module CT32/…V R • Front cover FS-R • Socket C12B0 R • Retaining clip S3-C	• Relay C3-T32X/…V R • 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	E 2 3 W H B 3 A N L F K G B1 Q 2 F Q t2 = t1 G H t2 = 0,5s		
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	CT33.3-T31/…V R AC 24, 48, 115, 230V DC 24, 48, 110, 220V	CT33.3-T32/…V R AC 24, 48, 115, 230V DC 24, 48, 110, 220V
Delivery includes:	• Relay C3-A30X/…V R • Module CT33/…V R • Front cover FS-R • Socket C12B0 R • Retaining clip S3-C	• Relay C3-T31X/…V R • Module CT33/…V R • Front cover FS-R • Socket C12B0 R • Retaining clip S3-C	• Relay C3-T32X/…V R • 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	I P 1		
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	CT36.3-T31/…V R AC 24, 48, 115, 230V DC 24, 48, 110, 220V	CT36.3-T32/…V R AC 24, 48, 115, 230V DC 24, 48, 110, 220V
Delivery includes:	• Relay C3-A30X/…V R • Module CT36/…V R • Front cover FS-R • Socket C12B0 R • Retaining clip S3-C	• Relay C3-T31X/…V R • Module CT36/…V R • Front cover FS-R • Socket C12B0 R • Retaining clip S3-C	• Relay C3-T32X/…V R • Module CT36/…V R • Front cover FS-R • Socket C12B0 R • Retaining clip S3-C

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

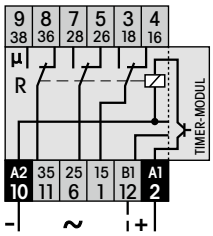
Power Relay



C31L

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

10A 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

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.:

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.:

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

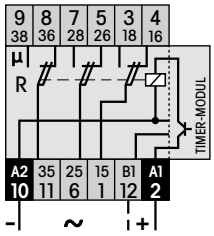
Control Relay



C32L

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

6A 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

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.:

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.:

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

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WORLD OF RELAYS

Time Delay Relay-Set
Relay, Module and Socket



Relay data's see:
Section industrial Relays

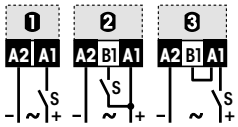
CE

MAX
MIN

Timer-Modul (Function diagrams: refer to page 152)

E 1 Triggering
Function see page 152

R2(R3) = Time function as R1
R2(R3) = Instantaneous contact



CT30 Economy timer

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



Function/ Triggering
E W B 1

Time range
0,25 s - 30 min
0,25 - 3 s…
2,5 - 30 min

CT32 Universal timer

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



Function/ Triggering
E 2 3
A N K B1 2
W B 3

Time range
0,15 s - 60 min
0,15 - 1,5 s…
6 - 60 min

CT33 Universal timer

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



Function/ Triggering
E 2 3 W H B 3
A N L F K G B1 Q 2
F Q t2 = t1 G H t2 = 0,5 s

Time range
30 ms - 60 h
30 - 150 ms…
12 - 60 h

CT36 Repeat cycle timer

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



Function/ Triggering
I P 1

Time range
2 x 50 ms - 60 h
2 x 50 - 600 ms…
5 - 60 h

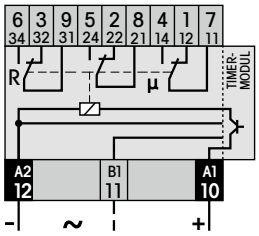
High Power Relay DC
16A 400V~



C5-A30X

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

16A 400V~
10 mA 10 V



Set Order-Nr.:
CT30.5-A30/…V R
AC 24, 115, 230V
DC 24, 110, 220V

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

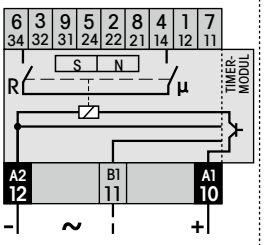
High Power Relay DC
10A @220V⎓



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~
10 mA 10 V



Set Order-Nr.:
CT30.5-M10/…V R
AC 24, 230V
DC 24, 48, 110, 220V

Delivery includes:
- Relay C5-M10X/…V R
- 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 R
- 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 R
- 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 R
- Module CT36/…V R
- Front cover FS-C5
- Socket S-5M
- Retaining clip S3-C

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