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 4mm² 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.
**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 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 130)

**Output data**  
- **Nominal voltage**: UC 24 – 48 V  
- **Type**: Solid state  
- **Rated operational current**: 150 mA  
- **On-state resistance**: ≤ 25 Ω  
- **Leakage current**: ≤ 150 μA

**Power supply and control input (UC = AC / DC)**  
- **Nominal voltage**: UC 24 – 48 V  
- **Operating voltage range**: 19 … 75 V  
- **Supply current**: 3 … 5 mA  
- **Type**: CT32, CT33  
- **Nominal voltage**: UC 24 – 48 V  
- **Operating voltage range**: 19 … 60 V  
- **Supply current**: 5 … 11 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**  
- **CT30, CT36, UC110-240**  
- **CT32, UC115**  
- **CT32, CT33, UC230**

**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.
### CT30 Economy timer

- **Function/Triggering**: E-W-B-0
- **Time range**: 0.25 s - 30 min
- **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-A30/...V R

### CT32 Universal timer

- **Function/Triggering**: A-N-L-F-K-G-B1-Q
- **Time range**: 0.15 s - 60 min
- **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-A30/...V R

### CT33 Universal timer

- **Function/Triggering**: E-W-B-0
- **Time range**: 30 ms - 60 h
- **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-A30/...V R

### CT36 Repeat cycle timer

- **Function/Triggering**: E-W-B-0
- **Time range**: 2 x 50 ms - 60 h
- **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-A30/...V R

### Power Relay

- **Function/Triggering**: CT36 Repeat cycle timer
- **Time range**: 1mA 5V
- **Delivery includes**:
  - Relay data's see: Section industrial Relays

### Control Relay

- **Function/Triggering**: CT32 Universal timer
- **Time range**: 10mA 5V
- **Delivery includes**:
  - Relay data's see: Section industrial Relays

### Signal Relay

- **Function/Triggering**: CT33 Universal timer
- **Time range**: 5mA 5V
- **Delivery includes**:
  - Relay data's see: Section industrial Relays

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Timer-Modul (Function diagrams: refer to page 130)
**CT30 Economy timer**
3 functions, voltage controlled, output LED. Seismic approved.

**Function/Triggering**
- Time range: 0.25 s - 30 min
- 0.25 s, 3 s, 2.5 - 30 min

**CT32 Universal timer**
7 functions, voltage controlled, time lapse display, blinking. Seismic approved.

**Function/Triggering**
- Time range: 0.15 s - 60 min
- 0.15 - 1.5 s, 1.5 - 5 min, 5 - 60 min

**CT33 Universal timer**
12 functions, voltage controlled, time lapse display, blinking, high setting accuracy by dial graduation 1:5.

**Function/Triggering**
- Time range: 30 min - 60 h
- 30 - 150 min, 150 - 60 min

**CT36 Repeat cycle timer**
Pulse or pause start. Time lapse display 1/12.

**Function/Triggering**
- Time range: 2 x 50 ms - 60 h
- 2 x 50 - 600 ms, 5 - 60 h

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### UC Solid-State Relay
- **35** Universal Solid-State Relay
- **36** AC SS double-channel
- **37** DC SS single-channel

**Timer-Modul** (Function diagrams: refer to page 130)
- **Triggering**

**CT36 Repeat cycle timer**
- **Set Order-Nr.**
  - UC 110-240 V
  - UC 24-48 V

**CT33 Universal timer**
- **Set Order-Nr.**
  - UC 115, 230 V
  - DC 24-48 V

**CT30 Economy timer**
- **Set Order-Nr.**
  - UC 24-48 V

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This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.
### DC Solid-State Relay

- **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.

<table>
<thead>
<tr>
<th>Relay Type</th>
<th>Voltage Range</th>
<th>Delivery Includes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C38/UC12-240V</td>
<td>UC 110-240V</td>
<td>Relay, Front cover FS-C, Socket C12B0, Retaining clip HF-32</td>
</tr>
<tr>
<td>C38/UC24-48V</td>
<td>UC 24-48V</td>
<td>Relay, Front cover FS-C, Socket C12B0, Retaining clip HF-32</td>
</tr>
<tr>
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### Time Delay Relay-Set

- **Relay, Module and Socket**

### High Power Relay DC

- **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.

- **C5-M10X**
  - Highpower Relay, in particular for DC loads up to 10A 220V (DC1)
  - With 2 NO contacts in series and a blow magnet for safe arc extinguishing.

### Delivery Includes:

- Relay C38/UC12-240V
- Module CT3x/…V
- Front cover FS-C
- Socket C12B0
- Retaining clip HF-32