

## Industrial relays

SHORT FORM

10  $\mu$ A ... 16 A

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Established in 1970 COMAT is renowned as a manufacturer of quality equipment and systems for industrial automation.

The manufacturing range comprises:

- Industrial relays
- Solid-state relays
- Time delay relays
- Monitoring relays



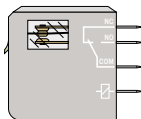
This issue replaces all previous issues.  
Availability, errors and specifications subject to change without notice.

# Plug-in Industrial Relays

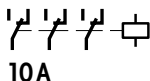


	Type	Type
	C10	
	C7	C21 C2
	CR31	C31 C3 C5
	C9	C4

## Miniature Industrial relays



**NEW**



The tables show the most popular Comat Industrial Relays ( **c...-...** green) and other relays ( **c...-...** grey).

Technical data for other relay groups is available.

The prospectus groups CR2, CR5 and CR7 include also solid-state relays of the same type.

### CR31

Prospectus CR1		
MIN/MAX	20A peak	
10A		
6A		
3A		
10mA		
3	<b>CR31</b>	



C10

C7, C9

## Terminal marking

Consecutive terminal no.

| | | |

Mark according to  
DIN/EN 50011

Consecutive terminal no.

| | | |

 $\mu$  = contact opening  
< 3mm

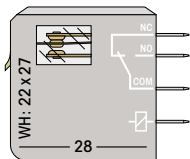
Prospectus CR2							
MIN/MAX	500A peak						
10A					10 $\mu$ Au		
6A							
3A							
10mA							
5mA							
1mA							
100 $\mu$ A							
I	1	C7-W10	C10-A10	C10-T13	C10-T12		
	2		C7-A20	C7-T21	C7-T22	C9-R21	KR13
	4					C9-A41	C9-A42
	2x 1						KR23
	3x 1						KR33



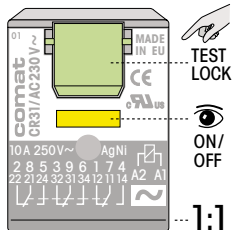
Double contacts



Remanence relays



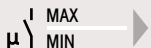
**NEW**



### 3-pole miniature industrial relays

- lockable manual operation
- mechanical indication of output status

Lloyd's  
Reg.




### Ordering example CR31

- Industrial relay CR31/DC24V
- Socket CS-30 (clip incl.)
- LED-Module CMX1/UC24-60V

Standard  **AC ~**  
50/60Hz

Standard  **AC ~**  
50/60Hz

Stand./D  **DC ==**  
 $\varnothing \leq 10\%$

 = Type "D" (option)

## CR31

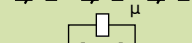
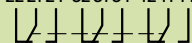
### Universal power relay 10A

with 3 power changeover contacts this is a robust relay for AC and DC circuits ranging from 10 mA 12V.

**10 A 250 V ~**

10 mA 12V

2 8 5 3 9 6 1 7 4  
22 21 24 32 31 34 12 11 14



A2 A1



14 13

CR31 with socket CS-30

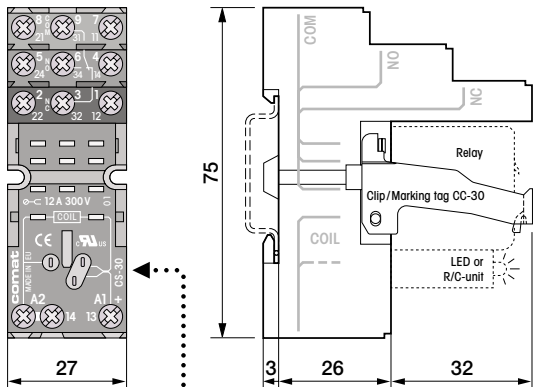
115, 230  
CR31 / AC ... V

24  
CR31 / AC ... V

24  
CR31 D / DC ... V

Option  = with 

## CS-30



### Plug-in coil voltages (modules)

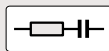
LED



CMX1/UC110-240V

CMX1/UC 24-60V

R/C-unit

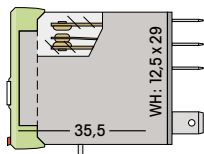


CMR1/UC110-240V

(4k7/0,01μF)

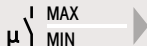
CMR1/UC 24-60V

(470E/0,22μF)



## 1-pole miniature industrial relay

- lockable manual operation
- mechanical indication of output status



## C10-A10

### Universal-power relay 10A

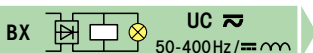
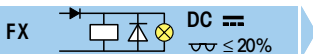
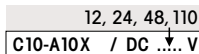
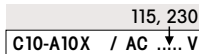
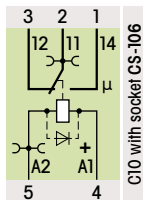
for AC and DC circuits ranging from 10mA 10V.

10A 250V~

10mA 10V

### Ordering example C10

- Relay C10-A10X/DC24V
- Socket CS-106 (clip incl.)
- Connector S10-B (option)

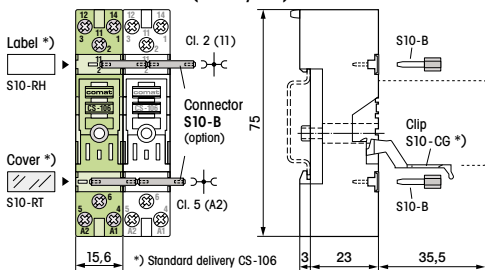


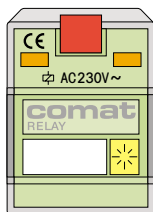
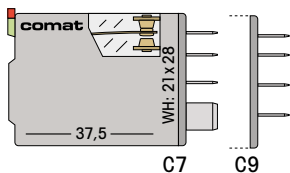


The series C10 are continuously being developed.

The Comat product specialists will be pleased to help you with information about the actual state of development.

#### Socket CS-106 (for relay C10)





## 2-/4-pole miniature industrial relay

- lockable manual operation
- mechanical indication of output status



## C7-A20

### Universal power relay 10A

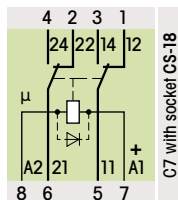
with 2 power changeover-contacts this is a robust relay for AC and DC circuits ranging from 10mA 10V.

**10A 250V~**

10mA 10V

### Ordering example C7

- Relay C7-A20X/AC230V
- Socket CS-18
- Retaining-Clip RC-G (option)



Standard **AC ~**  
50/60Hz

Standard **DC ==**  
≤10%

D, DX **DC ==**  
≤10%

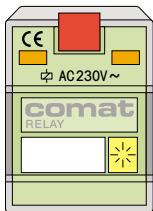
⊗ = Type "X" (option)

24, 48, 115, 230  
C7-A20 **X** / AC ... V

12, 24, 48, 110, 125  
C7-A20 / DC ... V

12, 24, 48, 110, 125  
C7-A20D **X** / DC ... V

Option **X** = with ⊗



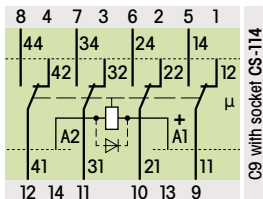
## C9-A41

### Universal control relay

with 4 changeover contacts for AC and DC circuits ranging from 10 mA 10 V.

**3A 250V~**

10 mA 10 V



24, 48, 115, 230

C9-A41 **X** / AC .... V

12, 24, 48, 110, 125

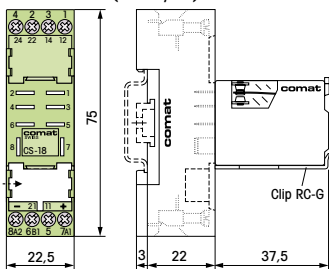
C9-A41 / DC .... V

12, 24, 48, 110, 125

C9-A41 D **X** / DC .... V

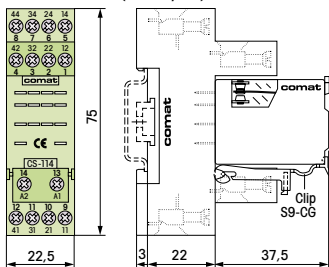
Option **X** = with ⊗

### Socket CS-18 (for relay C7)

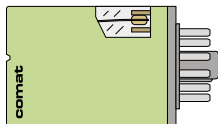


Plug-in R/C-unit  
RC0047-100/AC250V

### Socket CS-114 (for relay C9)



## Industrial relays

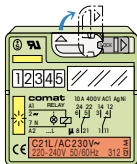


The tables show the most popular Comat Industrial Relays ( **C...-...** green) and other relays ( **C...-...** grey).

Technical data for other relay groups is available. The prospectus groups CR2, CR5 and CR7 include also solid-state relays of the same type.

## LONG LIFE ••

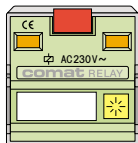
- 100 Mio mechanical cycles
- 700 000 cycles at full load



## C21, C31

Prospectus		CR5	
MIN/MAX			
10A			
6/5A			
10mA			
5mA			
1mA			
I	2	C21	C22
	3	C31	C32
	2x 1	C33	C34
	3x 1		C39

## STANDARD



## Terminal marking

Consecutive terminal no.

 Mark according to  
 DIN/EN 50011

Consecutive terminal no.

 $\mu$  = contact opening  
 < 3mm

## C2, C3, C4, C5

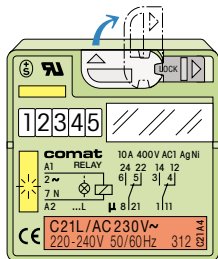
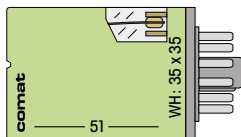
Prospectus CR4							
MIN/MAX							
16A	@ 220V $\approx$						
10A							
6A					10 $\mu$ Au		
10mA							
5mA							
1mA							
I Y	1	C5-M10					
	2			C2-A20	C3-R20	C2-T21	
	3		C5-A30	C3-A30		C3-T31	C3-T32
	4			C4-A40			



Double contacts



Remanence relays



## LONG LIFE ••

- 100 Mio mechanical cycles
- 700 000 cycles at full load



### Ordering example C31

- Relay C31/AC230V
- Socket EC-11 or C11A
- Retaining-clip HF-32 (option)



⊗ = Type "L" (option)

## C21

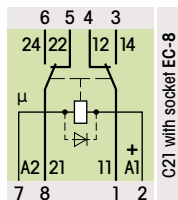
### Universal

### power relay 10A

with 2 power changeover-contacts this is a robust relay for AC and DC circuits ranging from 10mA 10V.

**10A 400V ~**

10mA 10V



24, 48, 115, 230

C21 **L** / AC ... V

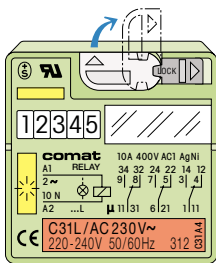
12, 24, 48, 110, 220

C21 / DC ... V

12, 24, 48, 110, 220

C21D **L** / DC ... V

Option **L** = with ⊗



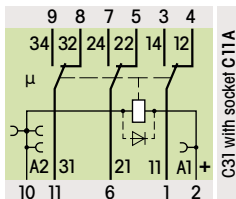
## C31

### Universal power relay 10A

with 3 power changeover-contacts this is a robust relay for AC and DC circuits ranging from 10mA 10V.

10A 400V~

10mA 10V



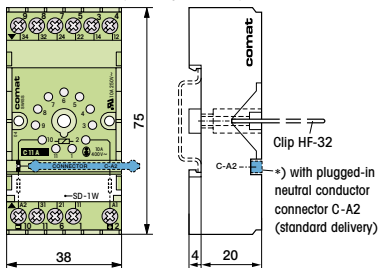
24, 48, 115, 230  
C31 L / AC .... V

12, 24, 48, 110, 220  
C31 / DC .... V

12, 24, 48, 110, 220  
C31D L / DC .... V

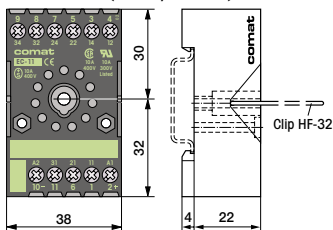
Option L = with

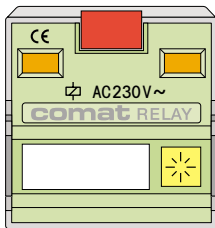
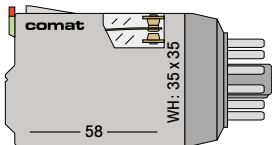
### Socket C11A\*) (for relays C3, C31)



### Socket EC-8 (for relays C2, C21)

### Socket EC-11 (for relays C3, C31)

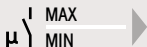




## STANDARD

### 2- and 3-pole industrial relays

- lockable manual operation
- mechanical indication of output status



### Ordering example C3

- Relay C3-A30X/AC230V
- Socket EC-11 or C11A
- Retaining-Clip S3-C (option)

Standard  **AC ~**  
50/60Hz

Standard  **DC ==**  
☹ ≤10%

D, DX  **DC ==**  
☹ ≤10%

⊗ = Type "X" (option)

## C2-A20

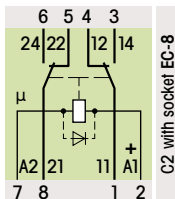
### Universal

### power relay 10A

with 2 power changeover-contacts this is a robust relay for AC and DC circuits ranging from 10mA 10V.

**10A 250V~**

10mA 10V



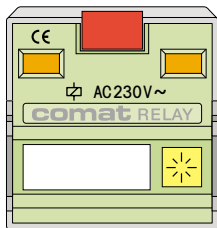
		24, 48, 115, 230
C2-A20	X / AC	↓ ... V

		12, 24, 48, 110, 125, 220
C2-A20	/ DC	↓ ... V

		12, 24, 48, 110, 125, 220
C2-A20D	X / DC	↓ ... V

Option **X** = with ⊗



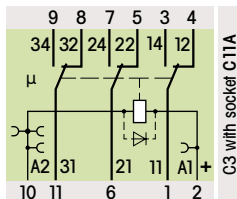


## C3-A30

**Universal power relay 10A**  
with 3 power changeover-contacts this is a robust relay for AC and DC circuits ranging from 10mA 10V.

**10A 250V~**

10mA 10V



24, 48, 115, 230

C3-A30 **X** / AC .... V

12, 24, 48, 110, 125, 220

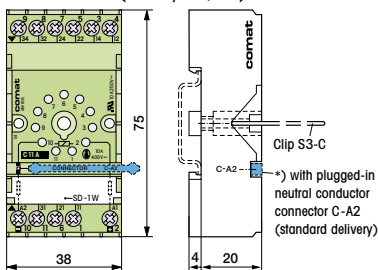
C3-A30 / DC .... V

12, 24, 48, 110, 125, 220

C3-A30D **X** / DC .... V

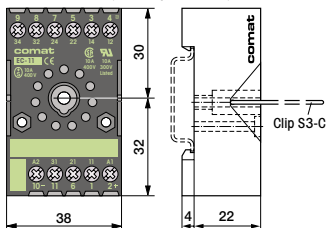
Option **X** = with **⊗**

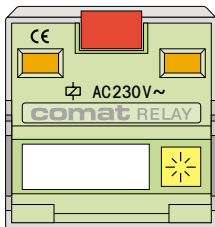
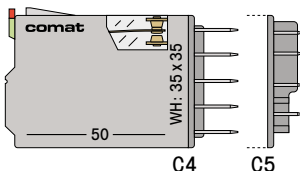
### Socket C11A\*) (for relays C3, C31)



### Socket EC-8 (for relays C2, C21)

### Socket EC-11 (for relays C3, C31)

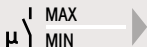




## STANDARD

### 3- and 4-pole industrial relays

- lockable manual operation
- mechanical indication of output status



### Ordering example C4

- Relay C4-A40X/AC230V
- Socket CS-14 (clip incl.)

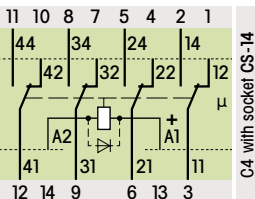
## C4-A40

### Universal power relay 10A

With 4 power changeover-contacts this is a robust relay for AC and DC circuits ranging from 10mA 10V.

**10A 250V~**

10mA 10V



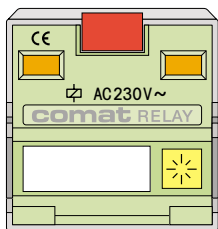
⊗ = Type "X" (option)

Option **X** = with ⊗

24, 48, 115, 230  
C4-A40 **X** / AC ... V

12, 24, 48, 110, 125, 220  
C4-A40 / DC ... V

12, 24, 48, 110, 125, 220  
C4-A40D **X** / DC ... V



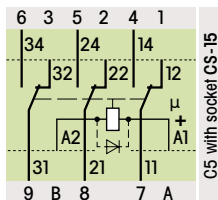
## C5-A30

### Universal power relay 16A

With 3 power changeover-contacts this is a robust relay for AC and DC circuits ranging from 10 mA 10V.

**16A 400V~ / 6A AC15**

10mA 10V



24, 48, 115, 230, 400

C5-A30 **X** / AC .... V

12, 24, 48, 110, 125, 220

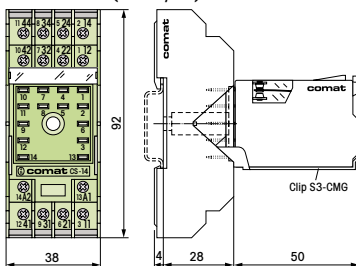
C5-A30 / DC .... V

12, 24, 48, 110, 125, 220

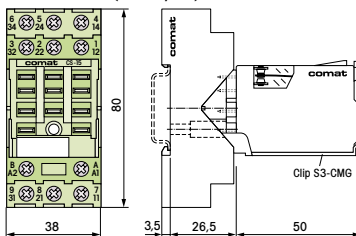
C5-A30D **X** / DC .... V

Option **X** = with **⊗**

Socket CS-14 (for relay C4)



Socket CS-15 (for relay C5)

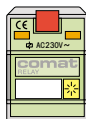


# Miniature Industrial Relays

Prospectus  
CR1



Prospectus  
CR2

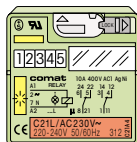


Tamb = 20°C (standard coil)

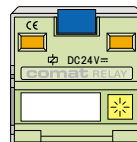
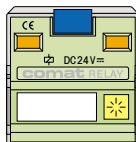
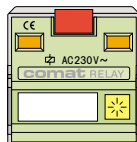
	<b>CR31</b>	<b>C10-A10</b>	<b>C7-A20</b>	<b>C9-A41</b>	
Switching current/voltage	10A 250V~	10A 250V~	10A 250V~	3A 250V~	
Switching capacity AC1/DC1	2500VA/..250W	2500VA/..240W	2500VA/..250W	700VA/...75W	
Recommended minimum load	10mA 12V	10mA 10V	10mA 10V	10mA 10V	
Contact material	AgNi 90/10	AgNi 90/10	AgNi 90/10	AgNi+0,2µAu	
Peak inrush power	20A(20ms)	30A(10ms)	30A(20ms)	15A(10ms)	
Switching cycles mech./electr. (AC1)	>20x10 <sup>6</sup> / >10 <sup>5</sup>	20x10 <sup>6</sup> / ≥10 <sup>5</sup>	20x10 <sup>6</sup> / ≥3x10 <sup>5</sup>	20x10 <sup>6</sup> / ≥10 <sup>5</sup>	
Operation voltage AC(50Hz)	0,8-1,6Un	0,8...1,2Un	0,8...1,2Un	0,8...1,2Un	
DC	0,75-1,7Un	0,8...1,3Un	0,8...1,3Un	0,8...1,3Un	
Power consumption AC/DC	1,0VA/0,75W	1,1 VA/0,6W	1,5VA/1W	1,5VA/1W	
Trigg.delay/Release time AC	20/10ms	11/8ms	16/10ms	16/10ms	
DC	15/10ms	10/5ms	15/6ms	15/6ms	
DC →†	15/25ms	10/10ms	15/20ms	15/20ms	
Test voltage $\square \rightarrow \updownarrow \rightarrow \updownarrow$	2500V / 2500V	5000V (8mm)	2500V / 2500V	2500V / 1000V	
Ambient temperature Operation	-40..+60°C	-20..+60°C	-20..+60°C	-20..+60°C	
Storage	-40..+80°C	-20..+100°C	-40..+85°C	-40..+85°C	

# Industrial Relays

Prospectus  
CR5



Prospectus  
CR4



Tamb = 20°C (standard coil)

	<b>C21, C31</b>	<b>C2-A20</b>	<b>C3-A30</b>	<b>C4-A40</b>	<b>C5-A30</b>
Switching current/voltage	10A 400V~	10A 250V~	10A 250V~	10A 250V~	16A 500V~
Switching capacity AC1/DC1	2500VA/..300W	2200VA/..250W	2200VA/..250W	2000VA/..250W	4000VA/..400W
Recommended minimum load	10mA 10V	10mA 10V	10mA 10V	10mA 10V	10mA 10V
Contact material	Ag (AgCuNi)	AgNi 90/10	AgNi 90/10	AgNi 90/10	AgNi 90/10
Peak inrush power	40A(20ms)	30A(10ms)	30A(10ms)	30A(20ms)	40A(20ms)
Switching cycles mech./electr. (AC1)	100x10 <sup>6</sup> /≥7x10 <sup>5</sup>	30x10 <sup>6</sup> /≥2x10 <sup>5</sup>	20x10 <sup>6</sup> /≥2x10 <sup>5</sup>	20x10 <sup>6</sup> /≥5x10 <sup>5</sup>	20x10 <sup>6</sup> /≥3x10 <sup>5</sup>
Operation voltage AC(50Hz)	0,8...1,3Un	0,8...1,2Un	0,8...1,2Un	0,8...1,2Un	0,8...1,2Un
DC	0,8...1,6Un	0,8...1,3Un	0,8...1,3Un	0,8...1,3Un	0,8...1,3Un
Power consumption AC/DC	2,5VA/1,2W	2,2VA/1,3W	2,2VA/1,3W	2,4VA/1,4W	2,4VA/1,4W
Trigg.delay/Release time AC	15/15ms	16/8ms	16/8ms	20/8ms	20/8ms
DC	12/8ms	15/8ms	15/8ms	18/8ms	18/8ms
DC →†	12/25ms	15/25ms	15/25ms	18/25ms	18/25ms
Test voltage  →  →	2500V / 2500V	2500V / 2500V	2500V / 2500V	2500V / 2500V	4000V / 4000V
Ambient temperature Operation	-40..+70°C	-40..+60°C	-40..+60°C	-40..+60°C	-40..+60°C
Storage	-40..+85°C	-40..+85°C	-40..+85°C	-40..+85°C	-40..+85°C

## Plug-in coil wirings for 3-pole industrial relays C3, C31 with socket C11A

Relay modules display the switching status and / or provide limitation of cutoff voltage peaks in control circuits using a diode or R/C-unit. R-Modules are simply plugged in the socket C11A.

### Ordering example

- Module RCL1/UC48V
- Socket C11A
- Relay C31 or C3
- Clip HF-32 or S3-C (option)

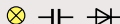
### Illuminated displays

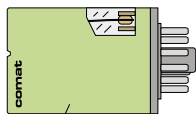


### Suppressing units



### Suppressing units with illuminated displays

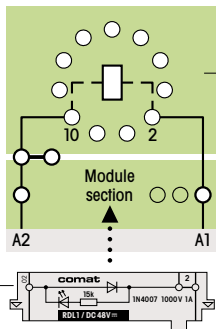




Industrial relay



R-Module

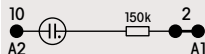


Socket C11A

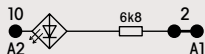
Relay coil →



**RL1/AC 110-240V ~**



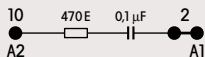
**RL1/UC12-24V ~**



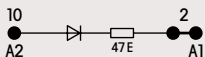
see RL1/UC... V

see RC1/UC... V

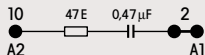
**RC1/UC 110-240V ~**



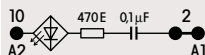
**RD1/DC12-220V ==**



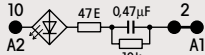
**RC1/UC 12-48V ~**



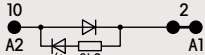
**RCL1/AC 110-240V ~**



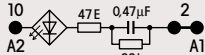
**RCL1/UC 24V ~**



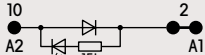
**RDL1/DC12-24V ==**



**RCL1/UC 48V ~**



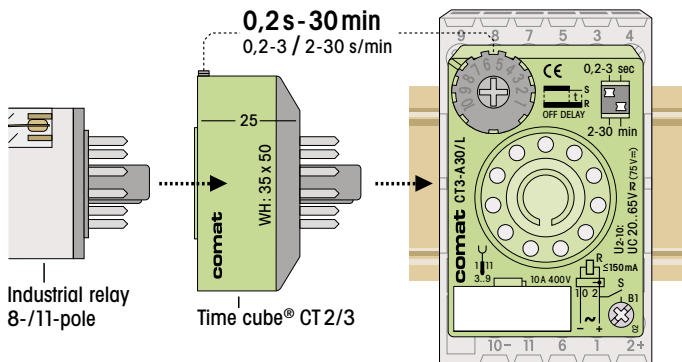
**RDL1/DC48V ==**



## Plug-in Time cubes®

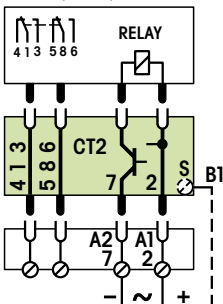
The original time cubes® are simply plugged-in between socket and relay without rewiring.

The relays contact connections remain through-connected to the socket.



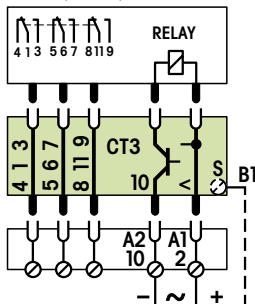
### CT2 (8-pin)

Industrial relay ...

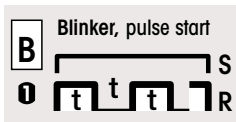
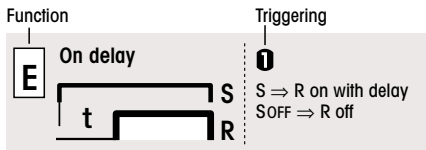


### CT3 (11-pin)

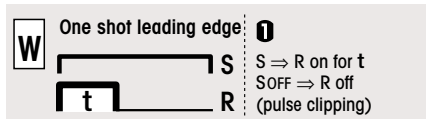
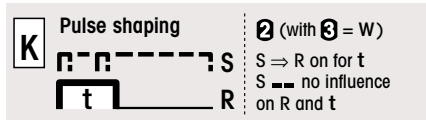
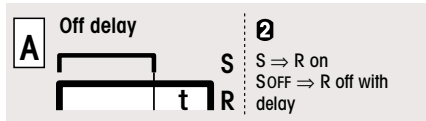
Time cube®



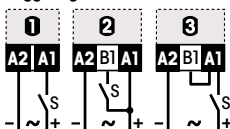




S = Triggering  
R = Output circuit  
⇒ = switches...



Triggering



Function	Order no.	UC180-265V	UC90-150V	UC90-265V	UC20-65V	DC9,5-18V
<b>E</b>	2 = 8-pin 3 = 11-pin CT..-E30/...			H	L	S
<b>A</b>	CT..-A30/...	U	M		L	S
<b>K</b> <b>W</b>	CT..-K30/...	U	M		L	S
<b>W</b>	CT..-W30/...			H	L	S
<b>B</b>	CT..-B30/...			H	L	S

Ordering example

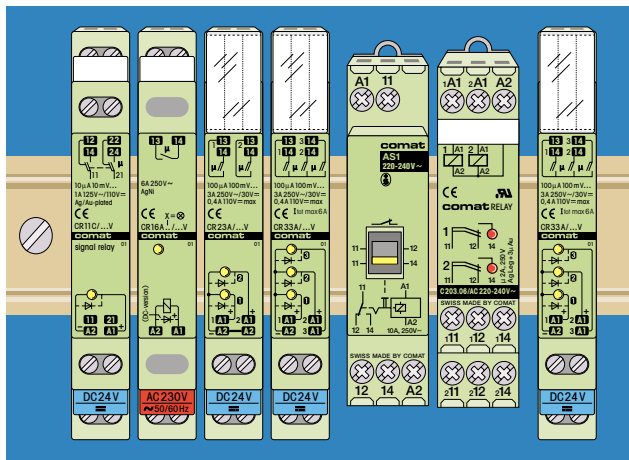
- Time cube CT3-E30/H
- Options:
- Clip HF-33 for C21, C31
- Clip S3-CT for C2, C3

# DIN-Relays

Prospectus

CR7

Stepping relays



Prospectus

CR7

MIN/MAX

6/5 A

3A

2A

1A

10mA

1mA

100µA

10 mV

10 µA

1

2

2x 1

3x 1

1

CR16...							
C103.01							C103.06
C133.01			CR11C				
C203.01		CR23A			C203.04		C203.06
		CR33A				C301.04	
CRS1C							

And also...

comat



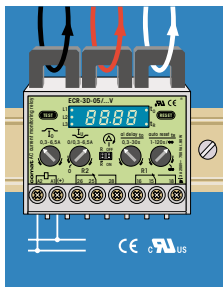
Established in 1970 COMAT is renowned as a manufacturer of quality equipment and systems for industrial automation.

The manufacturing range comprises:

- Industrial relays
- Solid-state relays
- Time delay relays
- Monitoring relays

Prospectus

UR

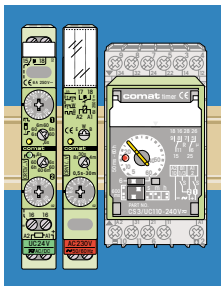


Monitoring relays



Prospectus

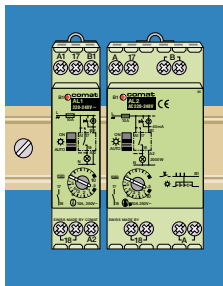
ZR



Time delay relays  
Repeat cycle timers  
Pulse shapers

Prospectus

CR 8



Installation Relays  
Stair case lighting timers  
Power stepping relays

# FAX ANSWER

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**Industrial relays SHORT FORM**

D  F  E

Prospectuses

**CR1 CR2**

Miniature  
Industrial relays

Prospectus

**CR8**

Installation relays  
Power stepping relays

Prospectuses

**CR4 CR5**

Industrial relays  
8-/11-pole

Prospectus

**ZR**

Time delay relays  
Repeat cycle timers

Prospectus

**CR7**

DIN-Relays  
17,5mm/13mm

Prospectus

**UR**

Monitoring relays  
Current transformers

**Sender:**

Company

Branch

Name

Department

Street

Country, Zip code, City

Phone

E-Mail

Kühn Controls AG, Gräfenhäuser Str. 14, D- 75305 Neuenbürg, Tel:+49-7082-940000