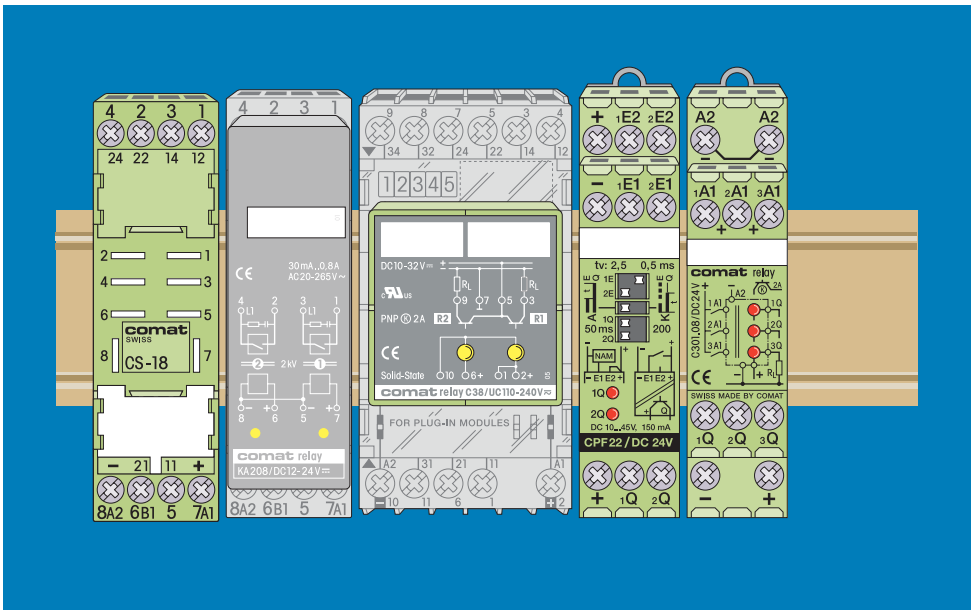
comat
INDUSTRIELLE ELEKTRONIK

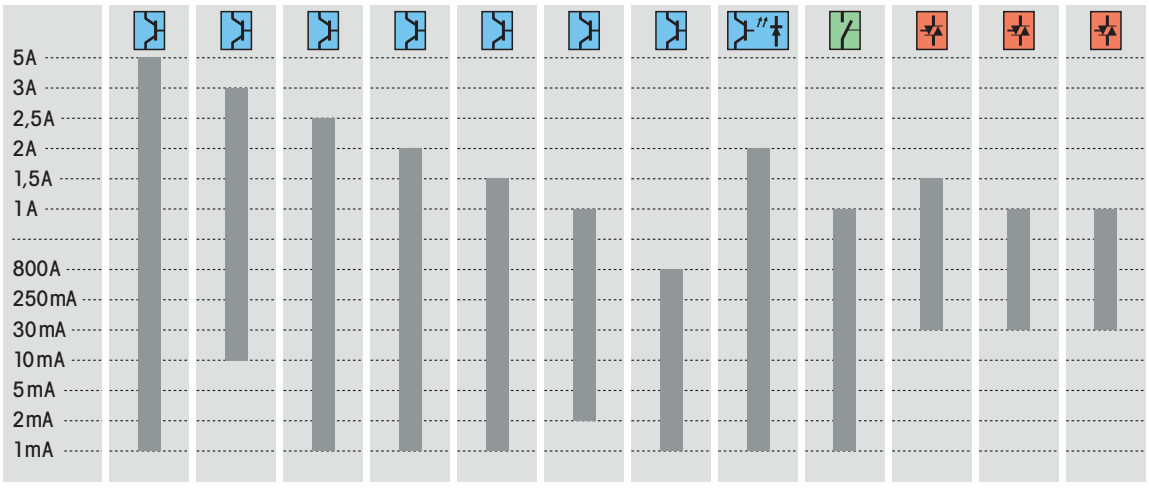
Industrial Relays

Solide-State Relays



DIN

Solide-State Relays Recommended application



1x Triac									C35	KA115	KA108	
2x Triac										KA208		C36
1x PNP	C37		KD125			CPF11	CTV11					
2x PNP				C38	KD215	CPF22						
3x PNP					KD315			C301.08 C311.08				
1+1 PNP		KDM3-24										
1x co PNP		KDW3-24										

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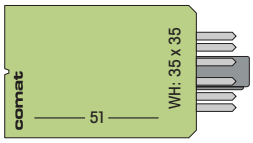
C35...C38

Solid-State



1- and 2-channel Solid-state Relay according IEC 67-1

- LED display for each channel
- operation voltage range 0,8..1,1 U_N
- galvanically decoupled control (2 kV)

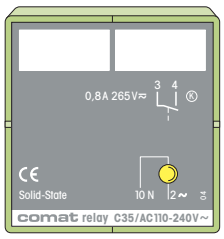
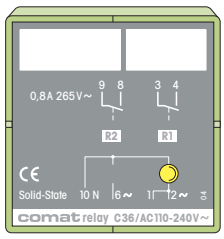
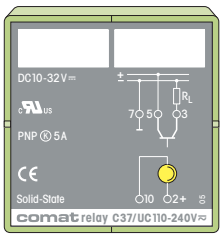
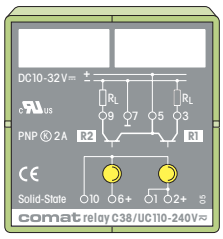
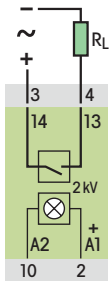
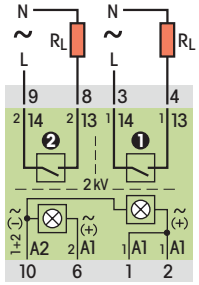
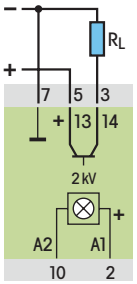
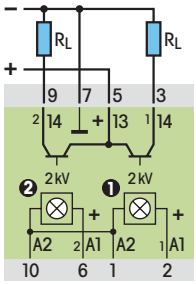
$T_{amb.}$ operation/storage:
-25..+60/-40..+85°C

CE UL — MAX / MIN

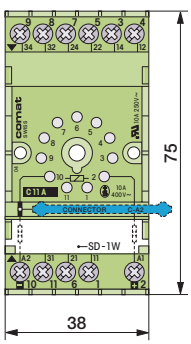
Connection No. on socket →
Designation according to DIN/EN 50011 →

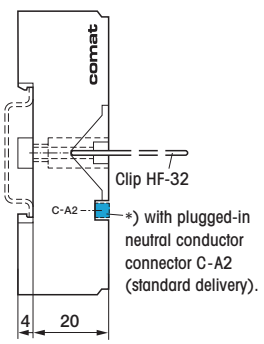
Connection on sockets
EC-11, C11A, C12B

Data at $T_{amb.}$ = 20°C

	Universal Solid-State Relay 1 x	AC Solid-State Relay 2 x	DC Solid-State Relay 1 x	DC Solid-State Relay 2 x
				
	C35	**C36**	**C37**	**C38**
	Universal Solid-State Relay for AC or DC load Highest switching frequency virtually limitless due to solid-state operation. No external protective wiring required.	**AC Solid-State Relay double-channel** Triac output, crossover switching. Built-in RC wiring protection. Especially for bulb-loads and high switching frequencies. • Minimum load: 30 mA	**DC Solid-State single-channel** Bounce-free and non wearing for DC loads (inductive/capacitive). Short-circuit/overload proof. No external wiring protection required.	**DC Solid-State Relay double-channel** Construction, characteristics and application like C37, but double-channel. 2A constant current per channel.
	0,8 A 10...265 V≂	**0,8 A** 20...265 V~	**5 A** 10...32 V⎓	**2 A** 10...32 V⎓
	1 mA 10 V	30 mA 10 V	1 mA 5 V	1 mA 5 V
				
Peak inrush power	1,5 A/1 s	8 A/20 ms	15 A/1 s	15 A/1 s
Voltage drop	≤ 3 V	≤ 1,5 V	≤ 0,2 V	≤ 0,2 V
Residual current	≤ 100 µA	≤ 3 mA	≤ 100 µA	≤ 100 µA
Short-circuit proof Ⓚ	≤ 12 A/200 µs	—	≤ 70 A/150 µs	≤ 70 A/150 µs
Control voltage	110-240 V / 24-48 V	110-240 V / 24 V	110-240 V / 24-48 V	110-240 V / 24-48 V
Frequency range	50..60 Hz / 40..400 Hz	50..60 Hz / 50..60 Hz	40..60 Hz / 40..400 Hz	40..60 Hz / 40..400 Hz
Control current	≤ 35 mA / ≤ 20 mA	≤ 17 mA / ≤ 12 mA	≤ 5 mA / ≤ 6 mA	≤ 5 mA / ≤ 6 mA
Triggering delay	≤ 20 ms / ≤ 20 ms	≤ 30 ms / ≤ 30 ms	≤ 30 ms / ≤ 20 ms	≤ 30 ms / ≤ 20 ms
Off delay	≤ 80 ms / ≤ 80 ms	≤ 40 ms / ≤ 80 ms	≤ 30 ms / ≤ 30 ms	≤ 30 ms / ≤ 30 ms
AC ~ 50/60 Hz	110-240 **C35 / AC ...... V**	110-240 **C36 / AC ...... V**		
UC ≂ ~/⎓	24-48 **C35 / UC ...... V**	24 **C36 / UC ...... V**	24-48, 110-240 **C37 / UC ...... V**	24-48, 110-240 **C38 / UC ...... V**

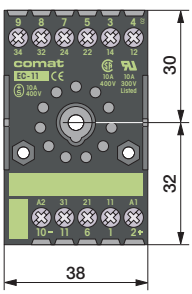
System socket C11A *)

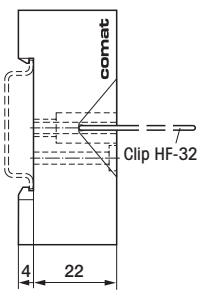




*) with plugged-in neutral conductor connector C-A2 (standard delivery).

Economy socket EC-11





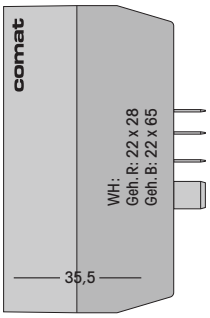
Ordering example

Relay **C37/UC110-240V**
Socket **EC-11** or **C11A**
Retaining clip **HF-32** (option)

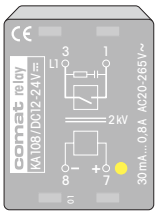
comat

KA

Solid-State



AC Solid-State Relay 1x



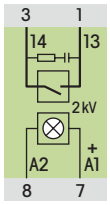
Case R

KA108

Universal AC Solid-State Relay
1-channel, 0,8A/AC240V. Triac output with RC wiring protection.
DC Triggering 12...30V galvanically isolated.

0,8A 20...265V~

30mA

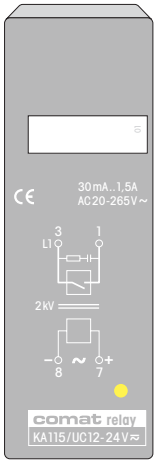


8A (20ms)
3mA
50/60Hz
≤1,5V

DC10...30V⎓
UA1: ≤6V
12ms
10mA (24V)

KA108/DC12-24V

AC Solid-State Relay 1x



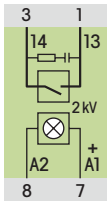
Case B

KA115

Universal AC Solid-State Relay
1-channel, 1,5A/AC240V. Triac output with RC wiring protection.
Triggering galvanically isolated.

1,5A 20...265V~

30mA

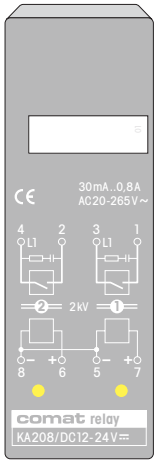


20A (20ms)
3mA
50/60Hz
≤1,5V

UC10...30V≈
UA1: ≤6V
12ms
10mA (24V)

KA115/UC12-24V

AC Solid-State Relay 2x



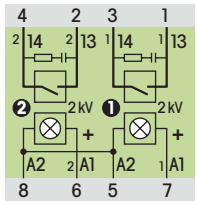
Case B

KA208

Universal AC Solid-State Relay
2-channel, 0,8A/AC240V (2x0,5A). Triac outputs RC wiring protection.
Width per channel: 11mm.
Triggering galvanically isolated.

0,8A 20...265V~

30mA



8A (20ms)
3mA
50/60Hz
≤1,5V

DC10...30V⎓
UA1: ≤6V
12ms
10mA (24V)

KA208/DC12-24V

AC Solid-State Relay
- 1- and 2-channel
- crossover switching
- each channel indicated by LED
- Triggering/Output 2kV

Tamb. operation/storage:
-25..+60/-40..+85°C

CE UL MAX MIN

Connection No. on socket →
Designation according to DIN/EN 50011 →

Connection with socket **CS-18**

Data at Tamb. =20°C

Peak inrush power	
Residual current	
Frequency range	
Voltage drop	
Control voltage	
Triggering OFF	
Switching delay	
Control current	

DC ⎓ ∿ ≤ 20%

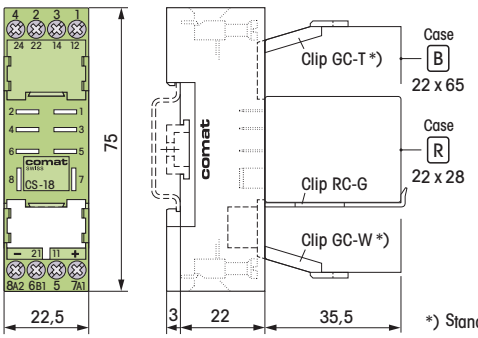
UC ≈ ~40-400Hz / ⎓ ∿

Ordering example

Relay **KA115/UC12-24V**
Socket **CS-18** or **S7-P**

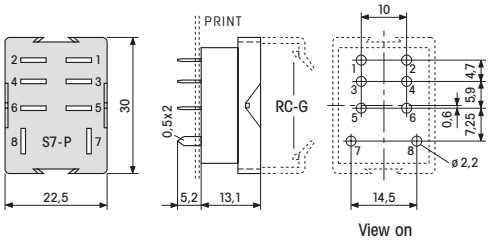
Retaining clip **RC-W** (option)

System socket CS-18



*) Standard delivery with relay (Case B)

Socket for printed circuit mounting S7-P



View on solder side

comat

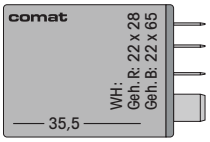
KD

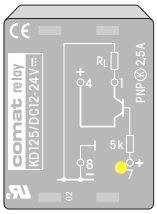
Solid-State

DC Solid-State Relay 1x

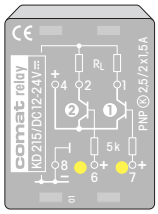
DC Solid-State Relay 2x

DC Solid-State Relay 3x

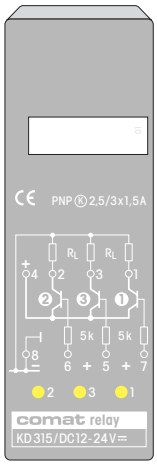




Case R



Case R



Case B

KD125

Short-circuit proof universal DC solid-state Relay 1-channel
2,5A/DC24V
With thermal overload protection and short-circuit resistent.

KD215

Solid-State Relay like KD125, but 2-channel
2,5A/2x1,5A/DC24V.
Width per channel: 11mm.
With thermal overload protection and short-circuit resistent.

KD315

Solid-State Relay like KD125, but 3-channel
2,5A/3x1,5A/DC24V.
Width per channel: 7,3mm.
With thermal overload protection and short-circuit resistent.

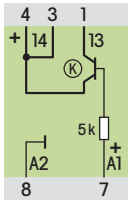
AC Solid-State Relay
- 1- and 3-channel
- overload/short-circuit proof Ⓚ
- limiting inductive voltage
- each channel indicated by LED
- Triggering/Output 2kV

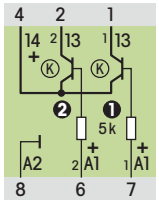
$T_{amb.}$ operation/storage:
-25..+60/-40..+85°C

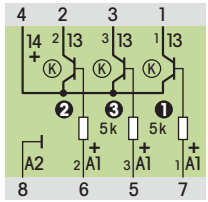
CE UL — MAX / MIN

	KD125	KD215	KD315
	2,5A 10...32V⎓	**1,5A** 10...32V⎓	**1,5A** 10...32V⎓
	1mA 5V	1mA 5V	1mA 5V

Connection No. on socket →
Designation according to DIN/EN 50011 →







Connection with socket **CS-18**

Data at $T_{amb.}$ = 20°C

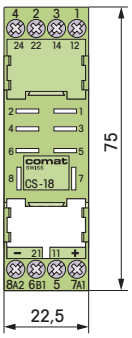
Output	1 PNP (noc)	2x1 PNP (noc)	3x1 PNP (noc)
Current peak	15A (20ms)	15A (20ms)	15A (20ms)
Residual current	<100µA	<100µA	<100µA
ON-resistance	50mΩ	50mΩ	50mΩ
Control voltage	DC 5...18V/10...32V⎓	DC 10...32V⎓	DC 10...32V⎓
Triggering OFF	$U_{A1\text{-}2}$: ≤3V/≤6V	$U_{A1\text{-}2}$: ≤3V/≤6V	$U_{A1\text{-}2}$: ≤3V/≤6V
ON-OFF-switching delay	2,5ms	2,5ms	2,5ms
Control current	4mA (24V)	4mA (24V)	4mA (24V)
DC ⎓ ≤ 20%	6-12, 12-24		
	KD125 / DC V	KD215/DC12-24V	KD315/DC12-24V

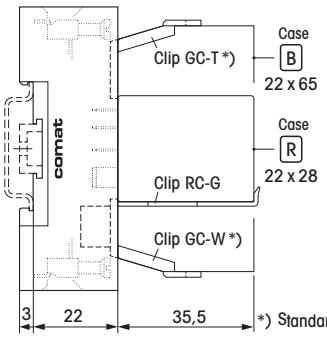
Ordering example

Relay **KD215/DC12-24V**
Socket **CS-18** or **S7-P**

Retaining clip **RC-G** (option)

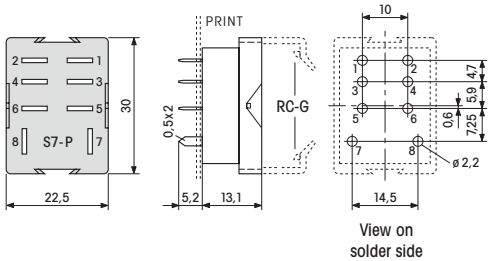
System socket CS-18





*) Standard delivery with relay (Case B)

Socket for printed circuit mounting S7-P



comat

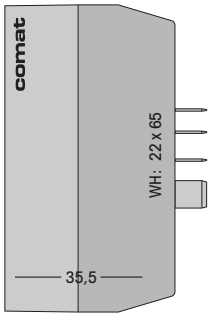
KDM3-24

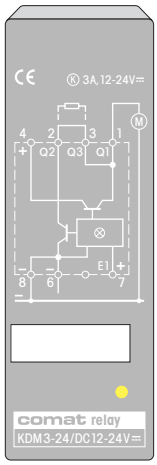
Solid-State

DC-Motor Control Relay

PNP NPN

TO CONTROL AND BRAKE DC MOTORS





Case B

KDM3-24

Motor Control Relay
- For controlling and braking of DC Motors

Tamb. operation/storage:
-25..+60/-40..+85°C

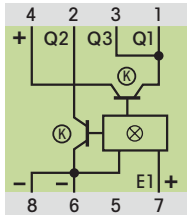
Interface Module
for PLC's and control systems with one PNP power contact and one NPN brake contact.
For DC motor controls with brake function.
The contacts are overload- and short circuit protected.

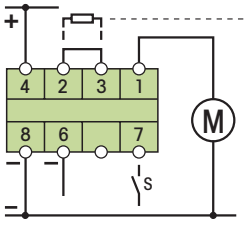
CE UL | MAX MIN

3A (5A) 24V⎓
10mA 10V

Connection No. on socket →
Designation according to DIN/EN 50011 →

Connection with socket CS-18





Adjustment braking action

Ⓚ 3A,12-24V⎓

Data at Tamb. = 20°C

	Power contact	Break contact
Contact type	FET PNP	FET NPN
Switching current/voltage	3A (5A) / 10-32V	3A (5A) / 10-32V
Switching power DC1	...100W	...100W
Peak inrush current	20A / 1s	20A / 1s
Contact resistance	<100mΩ	<100mΩ
Leakage current	<100µA	<100µA
Trigg. delay/release time	<1ms	<1ms
Operation voltage active	9-28V	
Power consumption Pmax	400mW / DC24V	

DC ⎓
≤ 20%

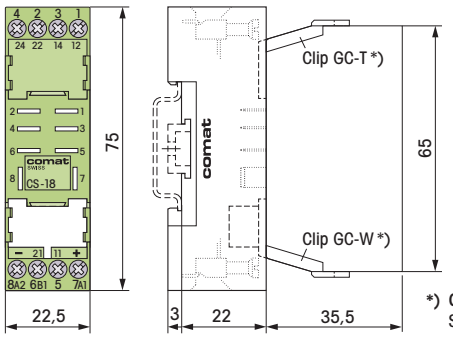
KDM3-24/DC12-24V

Ordering example

Interface module
KD215/DC12-24V
Socket
CS-18 or S7-P

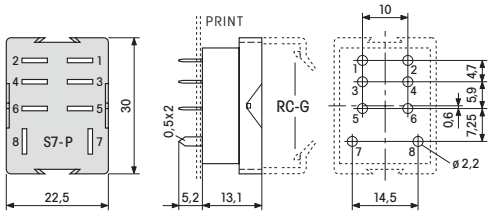
Retaining clip RC-G (option)

System socket CS-18



*) Clip GC-T + GC-W
Standard delivery with KDM

Socket for printed circuit mounting S7-P



View on solder side

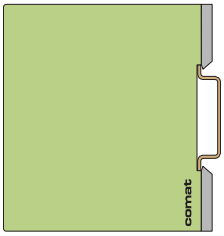
comat

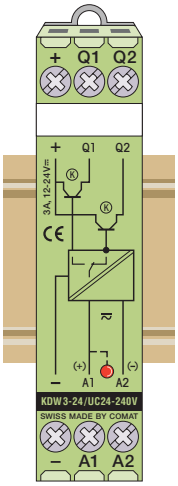
KDW3-24 DIN

Solide-State

Solide-State Changeover Relay

1x co





CHANGE OVER WITH SEMI CONDUCTOR

KDW3-24

Solid-State AC/DC Relay
- Change over PNP for all inductive loads
- Mounting onto DIN rail TS 35.

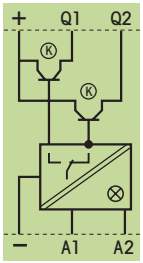
Test voltage: 2 kV

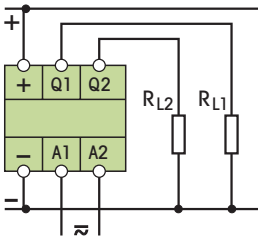
$T_{amb.}$ operation/storage:
-25..+60/-40..+85°C

Interface Module
Solidstate relay with 1x CO output PNP for 3A, 24V⎓.
The contacts are overload- and short circuit protected Ⓚ.
LED status display.
Galvanical isolated output.
This relay is specially recommended as an alternative to electro-mechanical relays for applications with high switching cycles.
Bounce-free switching.

CE UL | MAX MIN | **3A (5A) 24V⎓** | 10mA 10V

Connection



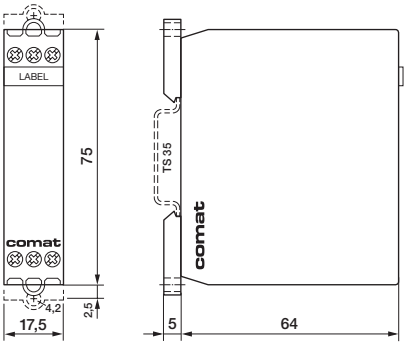


Data at T_{amp} = 20°C

Contact type	FET PNP
Switching current / voltage	3A (5A) / 10-32V
Switching power DC1	...72W (160W)
Peak inrush current	20A / 20ms
Contact resistance	<50mΩ
Leakage current	<100µA
Trigg. delay / release time	<5ms
Operation voltage active	18-255V AC/DC
Power consumption Pmax	3-8mA / <400mW

UC ≂
50/60Hz / ⎓

KDW3-24/UC24-240V



Ordering example

Interface module
KDW3-24/UC24-240V

comat

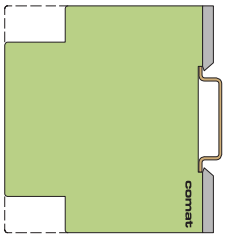
CTV, C300 DIN

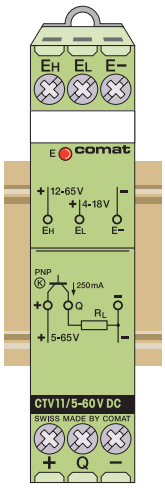
Solid-State

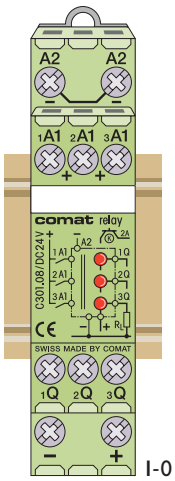
Solid-State Relay
Switching amplifier

Solid-State Relay
3x

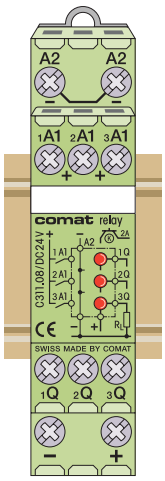
Solid-State Relay
3x







I-O = 2 kV



CTV11

Solid-State Relay
with galvanically isolated triggering input to control and switch DC loads.
1 channel 250 mA/DC 5-60 V

C301.08

Compact 3-channel Solid-State Relay
for the switching of DC loads up to 2 A/DC 24 V.
Outputs, galvanically isolated. Overload and short-circuit proof. Specially suitable for high switching cycles.
(PLC and ancillery)

C311.08

Compact 3-channel Solid-State Relay
like C301.08 but without galvanic isolation of outputs.

1- and 3-channel DC Solid-State Relay
- for high switching cycles
- galvanical separation 2 kV
- mounting onto DIN rail TS 35

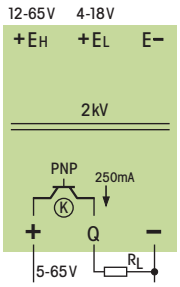
$T_{amb.}$ operation/storage:
-25..+60/-40..+85°C

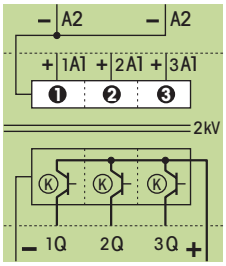
CE UL

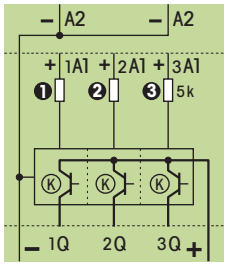
I MAX / MIN

CTV11	C301.08	C311.08
250 mA 5...60 V⎓	**2 A** 10...30 V⎓	**2 A** 10...30 V⎓
1 mA 10 V	1 mA 10 V	1 mA 10 V

Connection

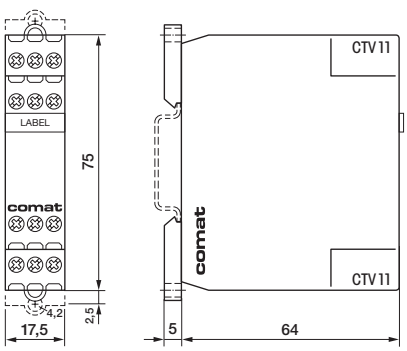






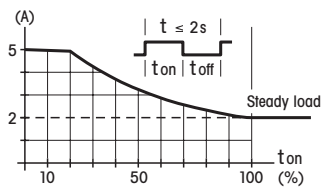
Data at $T_{amb.}$ = 20°C

	CTV11	C301.08	C311.08
Admissible peak current	0,75 A (20 ms)	15 A (20 ms)	15 A (20 ms)
Residual current	<100 µA	<100 µA	<100 µA
Voltage drop / ON-rheostat	<1 V	50 mΩ	50 mΩ
Control voltage (U_{nom})	EH 15-60 V / EL 5-15 V	DC 24 V (10...30 V)⎓	DC 24 V (10...30 V)⎓
Ripple ∿	≤ 10% @ 10 V	≤ 10% @ 10 V	≤ 10% @ 10 V
Triggering OUT	EL ≤ 2,5 V / EH ≤ 5 V	UA1: ≤ 6 V	UA1: ≤ 6 V
Control current on A1	Typ. 10 mA	4 mA @ 24 V	4 mA @ 24 V
Swtiching delay	ON 200 µs / OFF 400 µs	2,5 ms	2,5 ms
DC ⎓ ∿ ≤ 10%	CTV11/DC5-60V	C301.08/DC24V	C311.08/DC24V



Note on use C300
The 3 channels can be connected parallel in any desired arrangement (Imax. = 6 A).
The outputs are self-resetting after thermal overload.
Self-resetting after short-circuit (>17 A/150 µs): Triggering OFF.

Limit load diagram (resistive load)



Ordering example

Solid-state relay
C301.08/DC24V

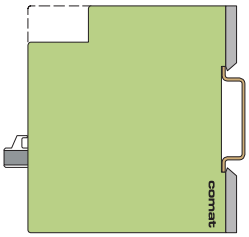
comat

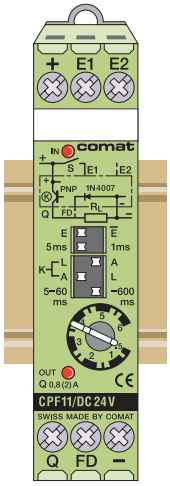
CPF 11, 22 DIN

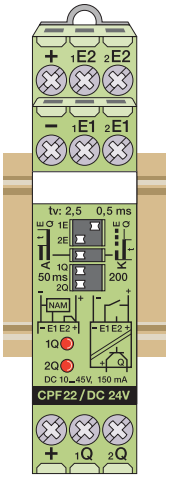
Solid-State

Pulse Shaper

Pulse Shaper 2x







CPF11

Single Channel Pulse Shaper
- Input reversible (E-Ē)
- Input and output times separately settable
- 3 (6) functions to choose
- Built-in free wheel diode 1A
- LED display for E and Q
- Settable functions:

K L A

Settable times:
input pulse ≥ 1/5 ms
output pulse 5 ÷ 600 ms

2 A 15...32 V ⎓

2 mA 10 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
- Settable functions:

K A

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

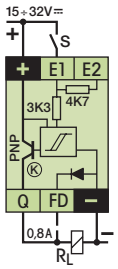
150 mA 45 V ⎓

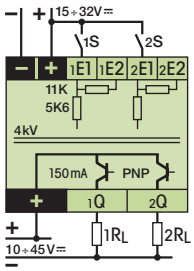
2 mA 10 V

Pulse shaper with timing function
To stretch respective to limit control pulses. Suitable for NAMUR sensors respective to analyze fast sequences with high revolutions and short pulses.

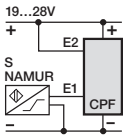
$T_{amb.}$ operation/storage:
-25..+60/-40..+85°C

CE UL MAX MIN

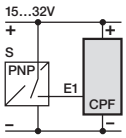




NAMUR sensor



Three-wire sensor



DC ⎓ ≤ 10%

CPF11/DC24V

CPF22/DC24V

K Pulse shaping

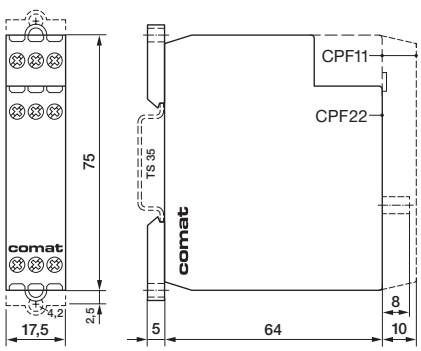
S (pulse or continuous contact)
⇒ R on for t
S ▬ no influence on R and t

L Pulse shaping retriggerable (subsequ. time operation from 0)

S (pulse or continuous contact)
⇒ R on for t
S on for t = t_{RESET}

A Off delay

S ⇒ R on
S_{OFF} ⇒ R off with delay



Example of order

Pulse shaper
CPF11/DC24V

Kühn Controls AG

Notes:

You want more information about this product, please call us: tel: +49 (0)7082-940000 or send us a fax: +49 (0)7082-940001, or email: sales@kuehn-controls.de or visit our Website: www.kuehn-controls.de