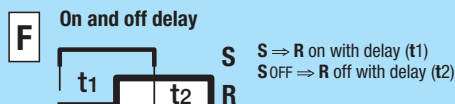
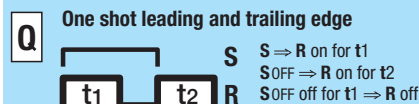
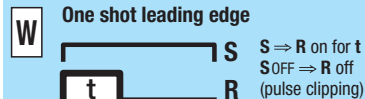


2.0 Time Relays

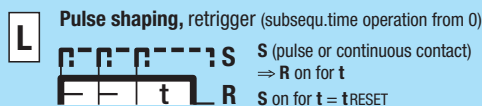
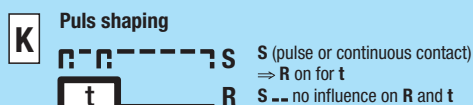
Delay functions



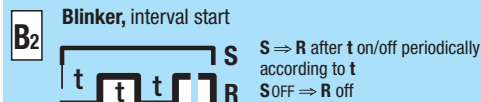
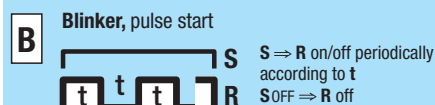
Shot timing modes



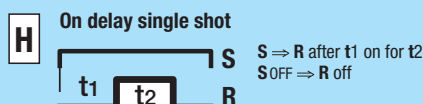
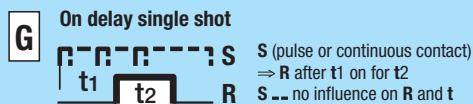
Puls shaping



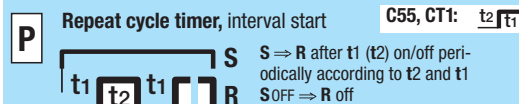
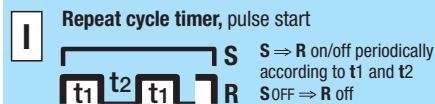
Blinker functions



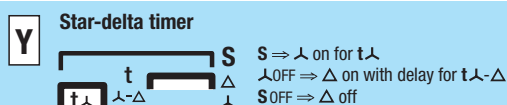
Delayed pulse



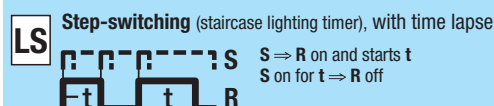
Repeat cycle timer



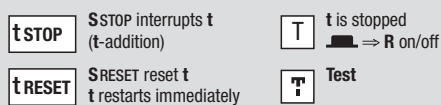
Special functions



Special functions



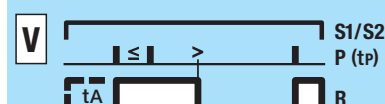
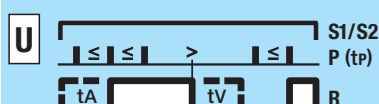
Stop/Reset



S = Triggering
R = Output circuit
 \Rightarrow = switches...

ON OFF

Pulse sequence monitoring



$S1/S2$ = Monitoring start
P = Pulse sequence
tp = Pulse separation

\leq : Pulse separation is **smaller** than the time tp
 $>$: Pulse separation is **larger** than the time tp

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

t_V = settable alarm delay
delay ($t_A = t_V$)

Time Cubes



Type	Function																				t-Stop	t-Reset	Ext. Poll	t max.				
	E	A	F	W	N	Q	K	L	M	B	B ₁	B ₂	G	H	I	P	S	LS	X ₁	U				V	sec	min	h	d
CT...E 30	●																						30				118	
CT...A 30		●																					30					
CT...K 30				●			●																30					
CT...B 30										●													30					

Modular plug-in Time Relays (CT-System)



Type	Function																				t-Stop	t-Reset	Ext. Pol.	t max.				
	E	A	F	W	N	Q	K	L	M	B	B ₁	B ₂	G	H	I	P	S	LS	X ₁	U				V	sec	min	h	d
CT32...	●	●		●	●		●			●	●									X ₁				60*			123	
CT33...	●	●	△	●	●	△	●	●		●	●		▲	▲											60*			
CT36...															●	●								60*				

DIN Time Relays

DIN

Type	Function																				t-Stop	t-Reset	Ext. Polt	t max.				
	E	A	F	W	N	Q	K	L	M	B	B ₁	B ₂	G	H	I	P	S	LS	Y	U				V	sec	min	h	d
CMD11 A		●																									100	
CMD11 E	●																										100	
CIM1	●	●		●	●		●			●	●							●	●						60*		106	
CIM12	●	●		●	●		●			●	●							●	●						60*		107	
CIM13	●	●		●	●		●			●	●							●	●						60*		108	
CIM14	●	●		●	●		●			●	●							●	●						60*		109	
CIM2	●	●						●	●				●	●	●										60*		110	
CIM22	●	●						●	●				●	●	●										60*		111	
CIM23	●	●						●	●				●	●	●										60*		112	
CIM3			●			●								●	●	●	●								60*		113	
CIM32			●			●								●	●	●	●								60*		114	
CIM33			●			●								●	●	●	●								60*		115	

* TF-60 Setting of long times

The TF60 time setting methode permits short examination of long delay time settings. Elapsing times of hours can be monitored in the sec. range.

Example for a delay time of 38h:

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

The delay time now amounts to 38h.

- ¹⁾ alternatively with instantaneous contact
- without auxiliary voltage (relay bistable)
 - without auxiliary voltage (relay monostable)

△ t₂ = t₁

▲ t₂ = 0.5s

Notes

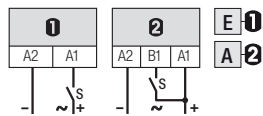
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2.1 ON and OFF delay Relays

Application	Types	Contacts	AC ratings	DC ratings
CMD Series				
ON or OFF delay 12 V AC / DC supply	CMD11-A/UC12V, CMD11-E/UC12V	1 CO	8 A / 250 V	8 A / 30 V
ON or OFF delay 24 V AC / DC supply	CMD11-A/UC24V, CMD11-E/UC24V	1 CO	8 A / 250 V	8 A / 30 V
ON or OFF delay 115 V AC supply	CMD11-A/AC115V, CMD11-E/AC115V	1 CO	8 A / 250 V	8 A / 30 V
ON or OFF delay 230 V AC supply	CMD11-A/AC230V, CMD11-E/AC230V	1 CO	8 A / 250 V	8 A / 30 V

CMD11-A/UC12V, CMD11-E/UC12V**1 CO contact | ON or OFF delay | 12 V AC / DC supply**

Maximum contact load	8 A 250 V AC-1	8 A 30 V DC-1
Recommended minimum contact load	100 mA / 12 V	

Time functions and related connection diagrams (Function diagrams: refer to page 148)**Time data**

5 partial time ranges, t_{max} (DIP switch)	0.6 s / 6 s / 60 s / 6 min / 60 min
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.2 % or 20 ms
Response time, power on, on A1	≤ 50 ms
Min. trigger pulse width on input B1	100 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 90 ms
Voltage failure buffering	≥ 5 ms

Contacts

Type	Single contact, CO
Material	AgNi
Rated operational current	10 A
Max. inrush current (10ms)	15 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig. 1)	2500 VA AC-1
Max. DC load DC-1 24 V / 220 V (Fig. 2)	150 W / 70 W

Power supply- and control input**CMD11-.../UC12V**

Nominal voltage (UC = AC / DC)	12 V AC/DC
Operating voltage range	9.6 ... 14.4 V AC/DC
Power consumption DC typ.	32 mA
Power consumption AC typ.	50 mA
Frequency range	48 ... 62 Hz
Input current into B1 typ. AC/DC	2.7 / 4.3 mA
Trigger threshold voltage on B1 typ AC / DC	5.2 / 8.8 V

Insulation

Test voltage open contact	1 kV rms / 1 min
Test voltage between contacts and control input	2 kV rms / 1 min

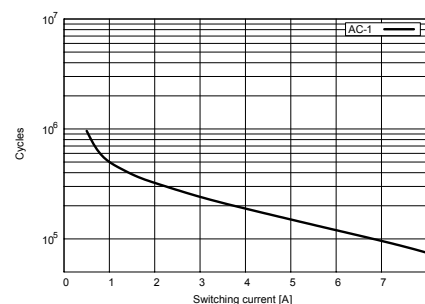
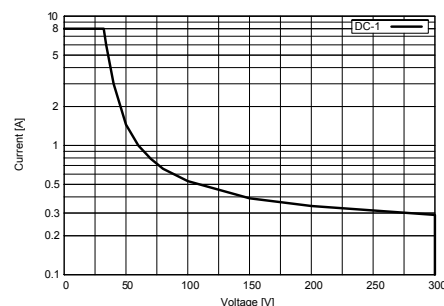
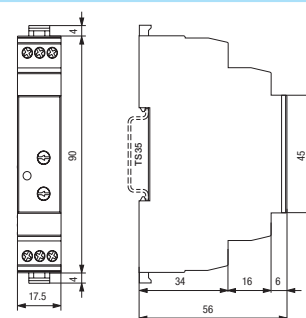
Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -40 ... 60 °C (no ice)
Life time of contacts 8 A, 250 V AC-1	75×10^3
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Protection degree	IP 20
Nominal screw torque	0.5 Nm
Housing material / Weight	Polyamide PA-66 (UL94-V0) / 48 g
Mounting	TS-35 or Back Panel Mounting

Product References

Monofunction Time Relay (Off delay)
Monofunction Time Relay (On delay)

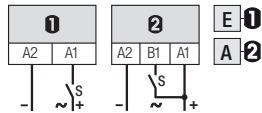
CMD11-A/UC12V
CMD11-E/UC12V

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**Connection diagram****Fig.1 AC voltage endurance****Fig. 2 DC load limit curve****Dimensions****Technical approvals, conformities**

IEC/EN 60947

1 CO contact | ON or OFF delay | 24 V AC / DC supply

Maximum contact load	8 A 250 V AC-1	8 A 30 V DC-1
Recommended minimum contact load	100 mA / 12 V	

Time functions and related connection diagrams (Function diagrams: refer to page 148)**Time data**

5 partial time ranges, t_{max} (DIP switch)	0.6 s / 6 s / 60 s / 6 min / 60 min
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.2 % or 20 ms
Response time, power on, on A1	≤ 50 ms
Min. trigger pulse width on input B1	100 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 90 ms
Voltage failure buffering	≥ 5 ms

Contacts

Type	Single contact, CO
Material	AgNi
Rated operational current	10 A
Max. inrush current (10ms)	15 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig. 1)	2500 VA AC-1
Max. DC load DC-1 24 V / 220 V (Fig. 2)	150 W / 70 W

Power supply- and control input**CMD11-.../UC24V**

Nominal voltage (UC = AC / DC)	24 V AC/DC
Operating voltage range	19.2 ... 28.8 V AC/DC
Power consumption DC typ.	12 mA
Power consumption AC typ.	21 mA
Frequency range	48 ... 62 Hz
Input current into B1 typ. AC / DC	11.6. / 9.5 mA
Trigger threshold voltage on B1 typ AC / DC	9.5 / 14 V

Insulation

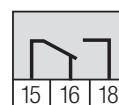
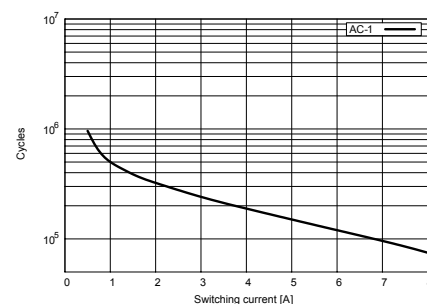
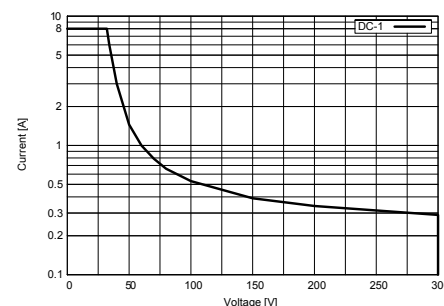
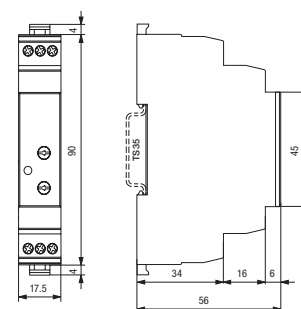
Test voltage open contact	1 kV rms / 1 min
Test voltage between contacts and control input	2 kV rms / 1 min

Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -40 ... 60 °C (no ice)
Life time of contacts 8 A, 250 V AC-1	75×10^3
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Protection degree	IP 20
Nominal screw torque	0.5 Nm
Housing material / Weight	Polyamide PA-66 (UL94-V0) / 48 g
Mounting	TS-35 or Back Panel Mounting

Product References

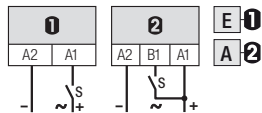
Monofunction Time Relay (Off delay)	CMD11-A/UC24V
Monofunction Time Relay (On delay)	CMD11-E/UC24V

CMD11-A/UC24V
CMD11-E/UC24V**Connection diagram****Fig.1 AC voltage endurance****Fig. 2 DC load limit curve****Dimensions****Technical approvals, conformities**

IEC/EN 60947

CMD11-A/AC115V, CMD11-E/AC115V**1 CO contact | ON or OFF delay | 115 V AC / DC supply**

Maximum contact load	8 A 250 V AC-1	8 A 30 V DC-1
Recommended minimum contact load	100 mA / 12 V	

Time functions and related connection diagrams (Function diagrams: refer to page 148)**Time data**

5 partial time ranges, t_{max} (DIP switch)	0.6 s / 6 s / 60 s / 6 min / 60 min
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.2 % or 20 ms
Response time, power on, on A1	≤ 50 ms
Min. trigger pulse width on input B1	100 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 90 ms
Voltage failure buffering	≥ 5 ms

Contacts

Type	Single contact, CO
Material	AgNi
Rated operational current	10 A
Max. inrush current (10ms)	15 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig. 1)	2500 VA AC-1
Max. DC load DC-1 24 V / 220 V (Fig. 2)	150 W / 70 W

Power supply- and control input**CMD11-.../AC115V**

Nominal voltage	115 V AC
Operating voltage range	92 ... 138 V AC
Power consumption AC typ.	47 mA
Frequency range	48 ... 62 Hz
Input current into B1 typ. AC	1.7 mA
Trigger threshold voltage on B1 typ AC	42 V

Insulation

Test voltage open contact	1 kV rms / 1 min
Test voltage between contacts and control input	2 kV rms / 1 min

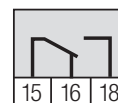
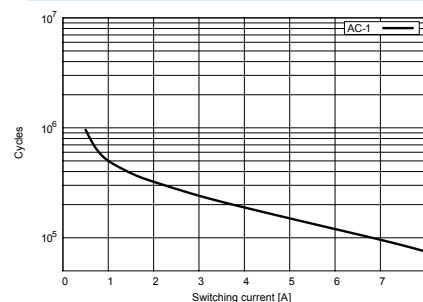
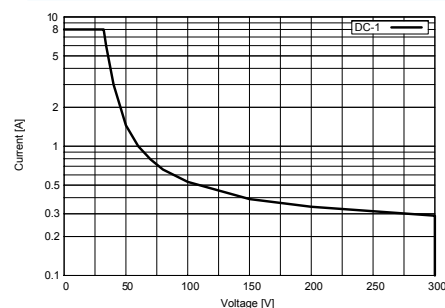
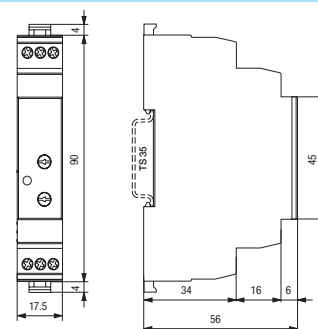
Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -40 ... 60 °C (no ice)
Life time of contacts 8 A, 250 V AC-1	75×10^3
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Protection degree	IP 20
Nominal screw torque	0.5 Nm
Housing material / Weight	Polyamide PA-66 (UL94-V0) / 48 g
Mounting	TS-35 or Back Panel Mounting

Product References

Monofunction Time Relay (Off delay)
Monofunction Time Relay (On delay)

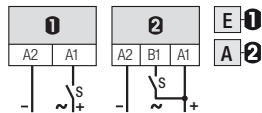
CMD11-A/AC115V
CMD11-E/AC115V

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**Connection diagram****Fig.1 AC voltage endurance****Fig. 2 DC load limit curve****Dimensions****Technical approvals, conformities**

IEC/EN 60947

CMD11-A/AC230V, CMD11-E/AC230V**1 CO contact | ON or OFF delay | 230 V AC / DC supply**

Maximum contact load	8 A 250 V AC-1	8 A 30 V DC-1
Recommended minimum contact load	100 mA / 12 V	

Time functions and related connection diagrams (Function diagrams: refer to page 148)**Time data**

5 partial time ranges, t_{max} (DIP switch)	0.6 s / 6 s / 60 s / 6 min / 60 min
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$: 0.5 ... 6
Time range tolerance	t_{min} : -30 % ... +0 % / t_{max} : -0 % ... +30 %
Repetition accuracy	± 0.2 % or 20 ms
Response time, power on, on A1	≤ 50 ms
Min. trigger pulse width on input B1	100 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 90 ms
Voltage failure buffering	≥ 5 ms

Contacts

Type	Single contact, CO
Material	AgNi
Rated operational current	10 A
Max. inrush current (10ms)	15 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig. 1)	2500 VA AC-1
Max. DC load DC-1 24 V / 220 V (Fig. 2)	150 W / 70 W

Power supply- and control input

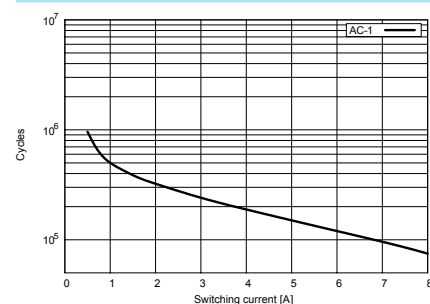
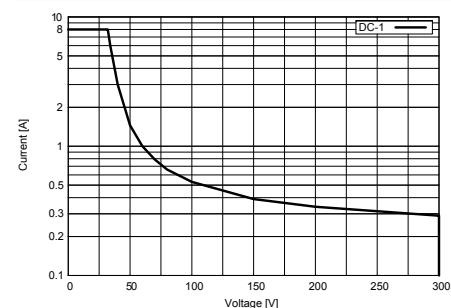
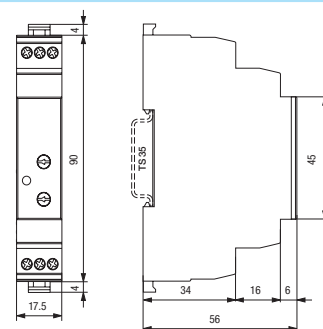
Power supply- and control input	CMD11-.../AC230V
Nominal voltage	230 V AC
Operating voltage range	184 ... 255 V AC
Power consumption AC typ.	60 mA
Frequency range	48 ... 62 Hz
Input current into B1 typ. AC	1.9 mA
Trigger threshold voltage on B1 typ AC	80 V

Insulation

Test voltage open contact	1 kV rms / 1 min
Test voltage between contacts and control input	2 kV rms / 1 min

Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -40 ... 60 °C (no ice)
Life time of contacts 8 A, 250 V AC-1	75×10^3
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Protection degree	IP 20
Nominal screw torque	0.5 Nm
Housing material / Weight	Polyamide PA-66 (UL94-V0) / 48 g
Mounting	TS-35 or Back Panel Mounting

Product References
Monofunction Time Relay (Off delay)
Monofunction Time Relay (On delay)
CMD11-A/AC230V
CMD11-E/AC230V
**Connection diagram****Fig.1 AC voltage endurance****Fig. 2 DC load limit curve****Dimensions****Technical approvals, conformities**

IEC/EN 60947

Notes

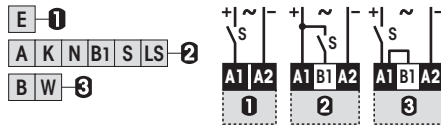
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2.2 Multifunction Time Relays

Application	Types	Contacts	AC ratings	DC ratings
CIM Series				
Multifunction 24-240 V AC / DC	CIM1, CIM1R	1 CO	16 A / 250 V	16 A / 24 V
Multifunction 24-240 V AC / DC	CIM12, CIM12R	1 Triac	2 A / 250 V	-
Multifunction 24-240 V AC / DC	CIM13, CIM13R	1 Mosfet	-	4 A / 30 V
Multifunction 24-240 V AC / DC	CIM14	1 NO	16 A / 250 V	16 A / 24 V
Multifunction 24-240 V AC / DC	CIM2, CIM2R	1 CO	16 A / 250 V	16 A / 24 V
Multifunction 24-240 V AC / DC	CIM22, CIM22R	1 Triac	2 A / 250 V	-
Multifunction 24-240 V AC / DC	CIM23, CIM23R	1 Mosfet	-	4 A / 30 V
Multifunction 24-240 V AC / DC	CIM3, CIM3R	1 CO	16 A / 250 V	16 A / 24 V
Multifunction 24-240 V AC / DC	CIM32, CIM32R	1 Triac	2 A / 250 V	-
Multifunction 24-240 V AC / DC	CIM33, CIM33R	1 Mosfet	-	4 A / 30 V

**Maximum contact load****16 A / 250 V AC-1 16 A / 24 V DC-1****Recommended minimum contact load****10 mA / 10 V****Time functions and related connection diagrams** (Function diagrams: refer to page 148)

The functions are selectable by rotary switch

**LED function table:**

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data7 partial time ranges, t_{max} (rotary switch)

Fine adjustment range (rotary knob)

Time range tolerance

Repetition accuracy

Response time, power on, on A1

Min. trigger pulse on B1

Reset time B1 (AC/DC)

Voltage failure buffering (50 / 60 Hz)

0.6, 6, 60 s / 6, 60 min / 6, 60 h

 $t_{min} \dots t_{max}$ 0.5 ... 6 t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 % ± 0.1 % or DC: 2 ms / AC: 10 ms ≤ 45 ms

20 ms (AC / DC)

 ≤ 30 ms ≥ 20 ms**Contacts**

Material CIM1 / CIM1R / Type

Rated operational current at 40 °C / 60 °C

Max. inrush current

Max. switching voltage AC-1

Max. AC load AC-1 (Fig.1)

Max. DC load DC-1 30 V / 250 V (Fig.2)

AgNi / 1 CO, micro disconnection, zero crossing

16 A / 13 A

30 A

250 V

4 kVA

240 W / 85 W

Power supply- and control input

Nominal voltage (A1, B1)

Operating voltage range

Power consumption

Frequency range

Allowed DC residual current into B1

AC Neon lamp residual current into B1

Trigger threshold voltage on B1, AC / DC

UC 24-240 V (UC = AC / DC)

UC 19 ... 250 V

approx. 1 W

15 ... 60 Hz

 ≤ 0.5 mA ≤ 10 mA

15 / 17 V

Insulation

Test voltage open contact

Test voltage between contacts and control input

1 kV rms / 1 min

2.5 kV rms / 1 min

Specifications

Ambient temperature storage /operation

Mechanical life of contact

Conductor cross section

Protection degree

Nominal screw torque

Housing material / weight

Mounting

-40 ... 85 °C / -40 ... 60 °C

(Railway: -46 °C) (no ice)

30 x 1'000'000 operations

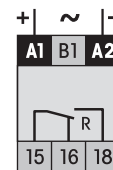
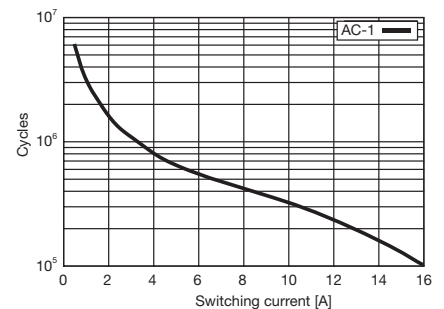
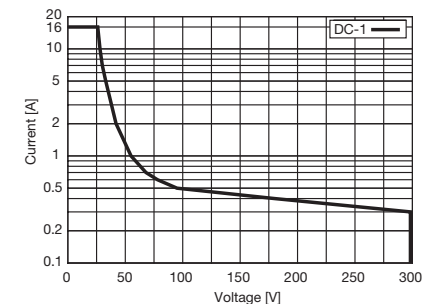
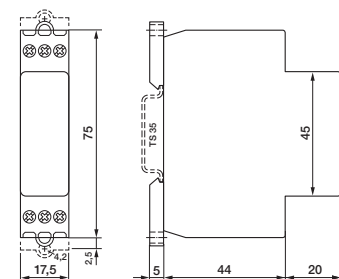
Stranded wire 2.5 mm², 2 x 1.5 mm²

IP 20

0.4 Nm

Lexan / 70 g

TS-35 or Back Panel Mounting

Product References**Standard****Railway****CIM1/UC24-240V****CIM1R/UC24-240V****Connection diagram****Fig.1 AC voltage endurance****Fig. 2 DC load limit curve****Dimensions****Technical approvals, conformities**

IEC/EN 50155, IEC/EN 60730

2.2 Multifunction Time Relays

CIM12, CIM12R

Multifunction | 24-240 V AC / DC



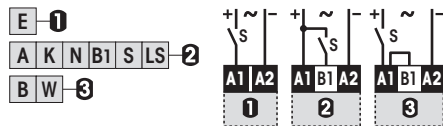
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Maximum contact load 2 A / 250 V AC-1
Minimum contact load 50 mA

Time functions and related connection diagrams (Function diagrams: refer to page 148)
The functions are selectable by rotary switch



LED function table:

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data

7 partial time ranges, t_{max} (rotary switch) 0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob) $t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
Repetition accuracy ± 0.1 % or DC: 2 ms / AC: 10 ms
Response time, power on, on A1 ≤ 45 ms
Min. trigger pulse on B1 20 ms (AC / DC)
Reset time B1 (AC/DC) ≤ 30 ms
Voltage failure buffering (50 / 60 Hz) ≥ 20 ms

Output

Type Triac, zero crossing
Rated operational current at 40 °C (Fig.1) 2 A
Max. inrush current (10 ms) 100 A
Max. switching voltage 250 V
Max. AC load AC-1 300 VA
 I^2t value 78 A²s
Leakage current < 1 mA

Power supply- and control input

Nominal voltage **UC 24-240 V (UC = AC / DC)**
Operating voltage range UC 19 ... 250 V
Power consumption approx. 1 W
Frequency range 15 ... 60 Hz
Allowed DC residual current into B1 ≤ 0.5 mA
AC Neon lamp residual current into B1 ≤ 10 mA
Trigger threshold voltage on B1, AC / DC 15 / 17 V

Insulation

Test voltage between output and control input 2.5 kV rms / 1 min

Specifications

Ambient temperature storage /operation -40 ... 85 °C / -40 ... 60 °C
(Railway: -70 °C) (no ice)
Conductor cross section Stranded wire 2.5 mm², 2 x 1.5 mm²
Protection degree IP 20
Nominal screw torque 0.4 Nm
Housing material / weight Lexan / 70 g
Mounting TS-35 or Back Panel Mounting

Product References

Standard

Railway

CIM12/UC24-240V
CIM12R/UC24-240V



Connection diagram

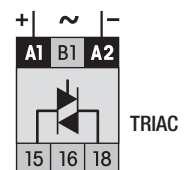
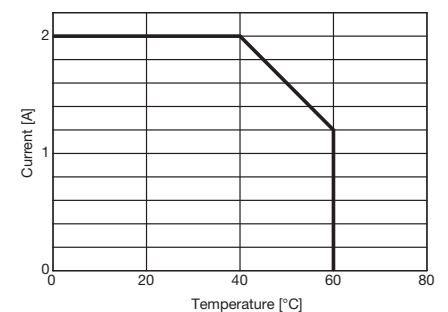
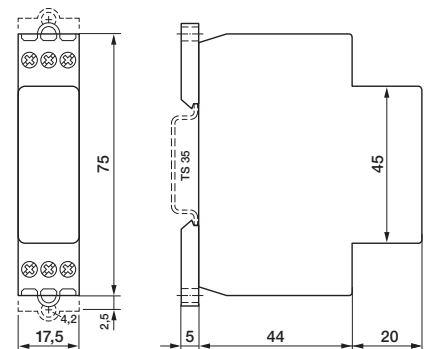


Fig.1 Output derating curve



Dimensions



Technical approvals, conformities

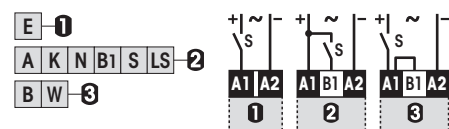


IEC/EN 50155, IEC/EN 60730



Maximum contact load 4 A / 30 V DC-1
Recommended minimum contact load 1 mA

Time functions and related connection diagrams (Function diagrams: refer to page 148)
 The functions are selectable by rotary switch

**LED function table:**

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data

7 partial time ranges, t_{max} (rotary switch) 0.6, 6, 60 s / 6, 60 min / 6, 60 h
 Fine adjustment range (rotary knob) $t_{min} \dots t_{max}$, 0.5 ... 6
 Time range tolerance t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
 Repetition accuracy ± 0.1 % or DC: 2 ms / AC: 10 ms
 Response time, power on, on A1 ≤ 45 ms
 Min. trigger pulse on B1 20 ms (AC / DC)
 Reset time B1 (AC/DC) ≤ 30 ms
 Voltage failure buffering (50 / 60 Hz) ≥ 20 ms

Output

Type MOS FET
 Rated operational current (Fig. 1) 4 A
 Max. inrush current (10 μ s) 40 A
 Max. switching voltage 30 V
 Leakage current $< 10 \mu$ A

Power supply- and control input

Nominal voltage (UC = AC / DC) **UC 24-240 V (UC = AC / DC)**
 Operating voltage range UC 19 ... 250 V
 Power consumption approx. 1 W
 Frequency range 15 ... 60 Hz
 Allowed DC residual current into B1 ≤ 0.5 mA
 AC Neon lamp residual current into B1 ≤ 10 mA
 Trigger threshold voltage on B1, AC / DC 15 / 17 V

Insulation

Test voltage between output and control input 2.5 kV rms / 1 min

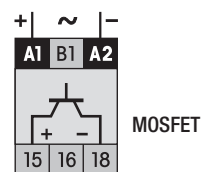
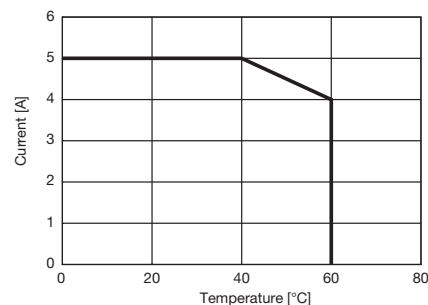
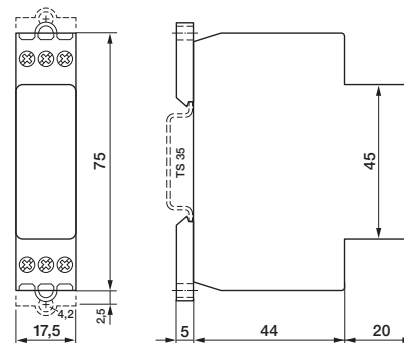
Specifications

Ambient temperature storage /operation -40 ... 85 °C / -40 ... 60 °C
 (Railway: -70 °C) (no ice)
 Conductor cross section Stranded wire 2.5 mm², 2 x 1.5 mm²
 Protection degree IP 20
 Nominal screw torque 0.4 Nm
 Housing material / Weight Lexan / 70 g
 Mounting TS-35 or Back Panel Mounting

Product References

Standard
Railway

CIM13/UC24-240V
CIM13R/UC24-240V

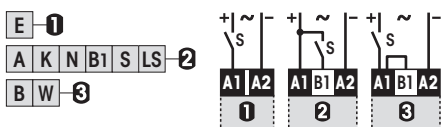
**Connection diagram****Fig.1 Output derating curve****Dimensions****Technical approvals, conformities**

IEC/EN 50155, IEC/EN 60730



Maximum contact load	16 A / 250 V AC-1 16 A / 24 V DC-1
Recommended minimum contact load	100 mA / 12 V

Time functions and related connection diagrams (Function diagrams: refer to page 148)
 The functions are selectable by rotary switch



LED function table:

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data

7 partial time ranges, t_{max} (rotary switch)	0.6, 6, 60 s / 6, 60 min / 6, 60 h
Fine adjustment range (rotary knob)	$t_{min} \dots t_{max}$, 0.5 ... 6
Time range tolerance	t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
Repetition accuracy	± 0.1 % or DC: 2 ms / AC: 10 ms
Response time, power on, on A1	≤ 45 ms
Min. trigger pulse on B1	20 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 30 ms
Voltage failure buffering (50 / 60 Hz)	≥ 20 ms

Contacts

Material	W / AgSnO ₂
Rated operational current at 40 °C / 60 °C	16 A / 13 A
Max. inrush current	165 A / 20 ms
	800 A / 200 μ s
Max. switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	4 kVA
Max. DC load DC-1 24 V	384 W

Power supply- and control input

Nominal voltage (A1, B1)	UC 24-240 V (UC = AC / DC)
Operating voltage range	16.8 ... 250 V
Power consumption	1.2 VA / 0.43 W
Frequency range	16 ... 60 Hz
Allowed DC residual current into B1	≤ 0.5 mA
AC Neon lamp residual current into B1	≤ 10 mA
Trigger threshold voltage on B1, AC / DC	15 / 17 V

Insulation

Test voltage open contact	1 kV rms / 1 min
Test voltage between contacts and control input	2.5 kV rms / 1 min

Specifications

Ambient temperature storage /operation	-40 ... 85 °C / -40 ... 60 °C (no ice)
Mechanical life of contact	5 x 1'000'000 operations
Conductor cross section	Stranded wire 2.5 mm ² , 2 x 1.5 mm ²
Protection degree	IP 20
Nominal screw torque	0.4 Nm
Housing material / weight	Lexan / 70 g
Mounting	TS-35 or Back Panel Mounting

Product References

Standard	CIM14/UC24-240V
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Connection diagram

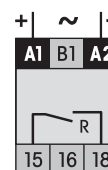


Fig.1 AC voltage endurance

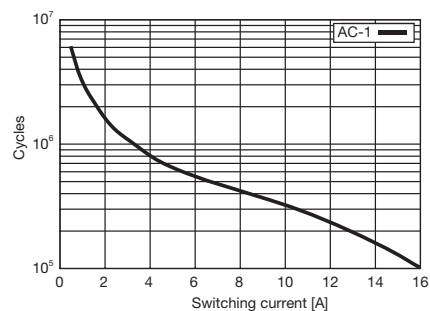
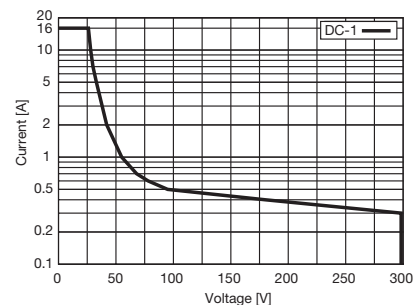
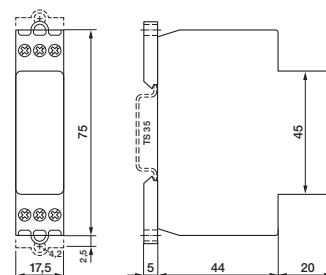


Fig. 2 DC load limit curve



Dimensions



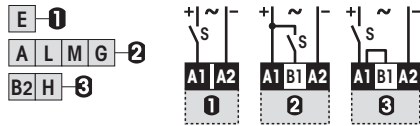
Technical approvals, conformities



IEC/EN 50155, IEC/EN 60730

**Maximum contact load****16 A / 250 V AC-1 16 A / 24 V DC-1****Recommended minimum contact load****10 mA / 10 V****Time functions and related connection diagrams** (Function diagrams: refer to page 148)

The functions are selectable by rotary switch

**LED function table:**

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data7 partial time ranges, t_{max} (rotary switch)

Fine adjustment range (rotary knob)

Time range tolerance

Repetition accuracy

Response time, power on, on A1

Min. trigger pulse on B1

Reset time B1 (AC/DC)

Voltage failure buffering (50 / 60 Hz)

0.6, 6, 60 s / 6, 60 min / 6, 60 h

 $t_{min} \dots t_{max}$ 0.5 ... 6 t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 % ± 0.1 % or DC: 2 ms / AC: 10 ms ≤ 45 ms

20 ms (AC / DC)

 ≤ 30 ms ≥ 20 ms**Contacts**

Material CIM2 / CIM2R / Type

Rated operational current at 40 °C / 60 °C

Max. inrush current

Max. switching voltage AC-1

Max. AC load AC-1 (Fig.1)

Max. DC load DC-1 30 V / 250 V (Fig.2)

AgNi / 1 CO, micro disconnection

16 A / 13 A

30 A

250 V

4 kVA

240 W / 85 W

Power supply- and control input

Nominal voltage (A1, B1)

Operating voltage range

Power consumption

Frequency range

Allowed DC residual current into B1

AC Neon lamp residual current into B1

Trigger threshold voltage on B1, AC / DC

UC 24-240 V (UC = AC / DC)

UC 19 ... 250 V

approx. 1 W

15 ... 60 Hz

 ≤ 0.5 mA ≤ 10 mA

15 / 17 V

Insulation

Test voltage open contact

Test voltage between contacts and control input

1 kV rms / 1 min

2.5 kV rms / 1 min

Specifications

Ambient temperature storage /operation

Mechanical life of contact

Conductor cross section

Protection degree

Nominal screw torque

Housing material / weight

Mounting

-40 ... 85 °C / -40 ... 60 °C

(Railway: -46 °C) (no ice)

30 x 1'000'000 operations

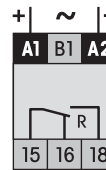
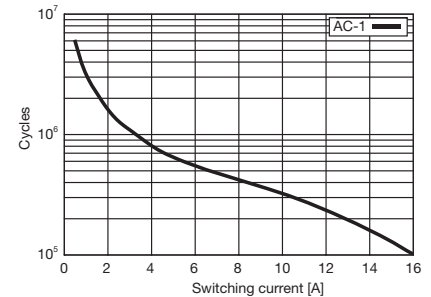
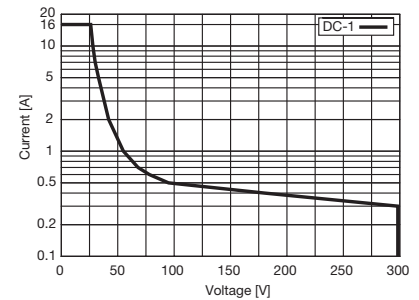
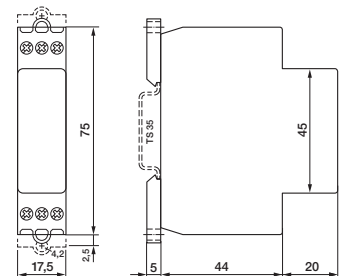
Stranded wire 2.5 mm², 2 x 1.5 mm²

IP 20

0.4 Nm

Lexan / 70 g

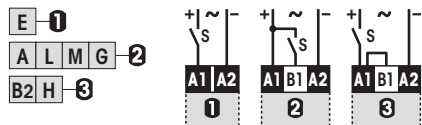
TS-35 or Back Panel Mounting

Product References**Standard****Railway****CIM2/UC24-240V****CIM2R/UC24-240V****Connection diagram****Fig.1 AC voltage endurance****Fig. 2 DC load limit curve****Dimensions****Technical approvals, conformities**

IEC/EN 50155, IEC/EN 60730

**Maximum contact load****2 A / 250 V AC-1****Minimum contact load****50 mA****Time functions and related connection diagrams** (Function diagrams: refer to page 148)

The functions are selectable by rotary switch

**LED function table:**

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data7 partial time ranges, t_{max} (rotary switch)

Fine adjustment range (rotary knob)

Time range tolerance

Repetition accuracy

Response time, power on, on A1

Min. trigger pulse on B1

Reset time B1 (AC/DC)

Voltage failure buffering (50 / 60 Hz)

0.6, 6, 60 s / 6, 60 min / 6, 60 h

 $t_{min} \dots t_{max}$, 0.5 ... 6 t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 % ± 0.1 % or DC: 2 ms / AC: 10 ms ≤ 45 ms

20 ms (AC / DC)

 ≤ 30 ms ≥ 20 ms**Output**

Type

Rated operational current at 40 °C (Fig.1)

Max. inrush current (10 ms)

Max. switching voltage

Max. AC load AC-1

 I^2t value

Leakage current

Triac, zero crossing

2 A

100 A

250 V

300 VA

78 A²s < 1 mA**Power supply- and control input**

Nominal voltage

Operating voltage range

Power consumption

Frequency range

Allowed DC residual current into B1

AC Neon lamp residual current into B1

Trigger threshold voltage on B1, AC / DC

UC 24-240 V (UC = AC / DC)

UC 19 ... 250 V

approx. 1 W

15 ... 60 Hz

 ≤ 0.5 mA ≤ 10 mA

15 / 17 V

Insulation

Test voltage between output and control input

2.5 kV rms / 1 min

Specifications

Ambient temperature storage /operation

-40 ... 85 °C / -40 ... 60 °C

(Railway: -70 °C) (no ice)

Conductor cross section

Stranded wire 2.5 mm², 2 x 1.5 mm²

Protection degree

IP 20

Nominal screw torque

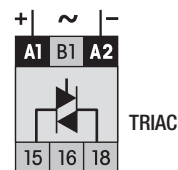
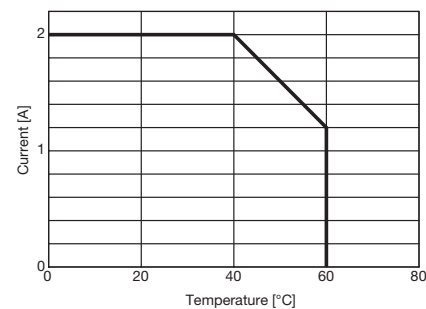
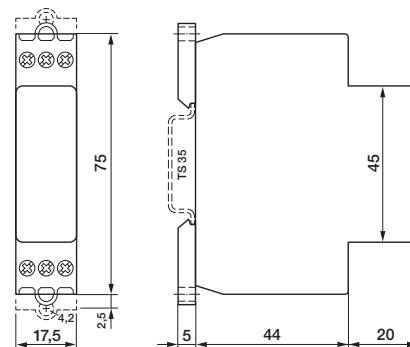
0.4 Nm

Housing material / weight

Lexan / 70 g

Mounting

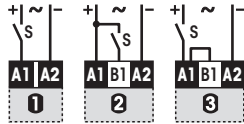
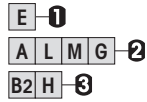
TS-35 or Back Panel Mounting

Product References**Standard****CIM22/UC24-240V****Railway****CIM22R/UC24-240V****Connection diagram****Fig.1 Output derating curve****Dimensions****Technical approvals, conformities**

IEC/EN 50155, IEC/EN 60730

**Maximum contact load****4 A / 30 V DC-1****Recommended minimum contact load****1 mA****Time functions and related connection diagrams** (Function diagrams: refer to page 148)

The functions are selectable by rotary switch

**LED function table:**

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data7 partial time ranges, t_{max} (rotary switch)

Fine adjustment range (rotary knob)

Time range tolerance

Repetition accuracy

Response time, power on, on A1

Min. trigger pulse on B1

Reset time B1 (AC/DC)

Voltage failure buffering (50 / 60 Hz)

0.6, 6, 60 s / 6, 60 min / 6, 60 h

 $t_{min} \dots t_{max}$, 0.5 ... 6 t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 % ± 0.1 % or DC: 2 ms / AC: 10 ms ≤ 45 ms

20 ms (AC / DC)

 ≤ 30 ms ≥ 20 ms**Output**

Type

Rated operational current (Fig. 1)

Max. inrush current (10 μ s)

Max. switching voltage

Leakage current

MOS FET

4 A

40 A

30 V

< 10 μ A**Power supply- and control input**

Nominal voltage (UC = AC / DC)

Operating voltage range

Power consumption

Frequency range

Allowed DC residual current into B1

AC Neon lamp residual current into B1

Trigger threshold voltage on B1, AC / DC

UC 24-240 V (UC = AC / DC)

UC 19 ... 250 V

approx. 1 W

15 ... 60 Hz

 ≤ 0.5 mA ≤ 10 mA

15 / 17 V

Insulation

Test voltage between output and control input

2.5 kV rms / 1 min

Specifications

Ambient temperature storage /operation

Conductor cross section

Protection degree

Nominal screw torque

Housing material / Weight

Mounting

-40 ... 85 °C / -40 ... 60 °C

(Railway: -70 °C) (no ice)

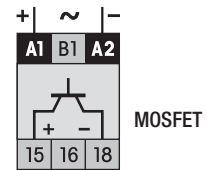
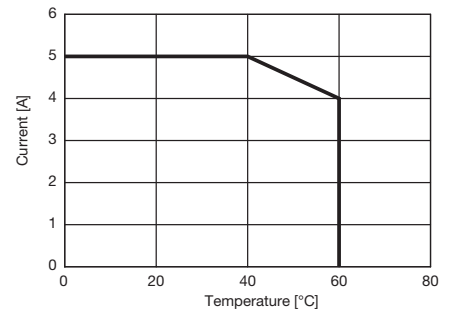
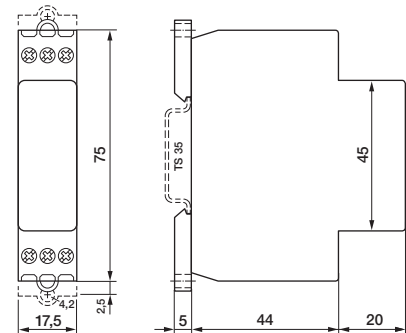
Stranded wire 2.5 mm², 2 x 1.5 mm²

IP 20

0.4 Nm

Lexan / 70 g

TS-35 or Back Panel Mounting

Product References**Standard****Railway****CIM23/UC24-240V****CIM23R/UC24-240V****Connection diagram****Fig.1 Output derating curve****Dimensions****Technical approvals, conformities**

IEC/EN 50155, IEC/EN 60730

**Maximum contact load**

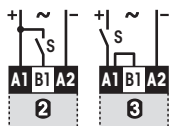
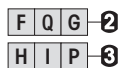
16 A / 250 V AC-1 16 A / 24 V DC-1

Recommended minimum contact load

10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 148)

The functions are selectable by rotary switch

**LED function table:**

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data7 partial time ranges, t_{max} (rotary switch)

0.6, 6, 60 s / 6, 60 min / 6, 60 h

Fine adjustment range (rotary knob)

 $t_{min} \dots t_{max}$, 0.5 ... 6

Time range tolerance

 t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %

Repetition accuracy

 ± 0.1 % or DC: 2 ms / AC: 10 ms

Response time, power on, on A1

 ≤ 45 ms

Min. trigger pulse on B1

20 ms (AC / DC)

Reset time B1 (AC/DC)

 ≤ 30 ms

Voltage failure buffering (50 / 60 Hz)

 ≥ 20 ms**Contacts**

Material CIM3 / CIM3R / Type

AgNi / 1 CO, micro disconnection

Rated operational current at 40 °C / 60 °C

16 A / 13 A

Max. inrush current

30 A

Max. switching voltage AC-1

250 V

Max. AC load AC-1 (Fig.1)

4 kVA

Max. DC load DC-1 30 V / 250 V (Fig.2)

240 W / 85 W

Power supply- and control input

Nominal voltage (A1, B1)

UC 24-240 V (UC = AC / DC)

Operating voltage range

UC 19 ... 250 V

Power consumption

approx. 1 W

Frequency range

15 ... 60 Hz

Allowed DC residual current into B1

 ≤ 0.5 mA

AC Neon lamp residual current into B1

 ≤ 10 mA

Trigger threshold voltage on B1, AC / DC

15 / 17 V

Insulation

Test voltage open contact

1 kV rms / 1 min

Test voltage between contacts and control input

2.5 kV rms / 1 min

Specifications

Ambient temperature storage /operation

-40 ... 85 °C / -40 ... 60 °C

(Railway: -46 °C) (no ice)

Mechanical life of contact

30 x 1'000'000 operations

Conductor cross section

Stranded wire 2.5 mm², 2 x 1.5 mm²

Protection degree

IP 20

Nominal screw torque

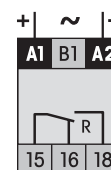
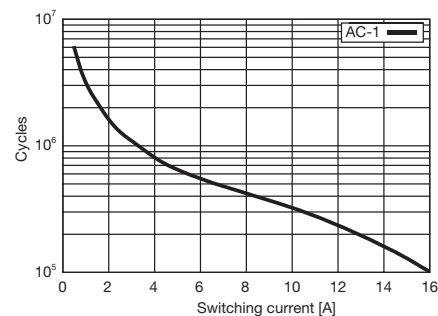
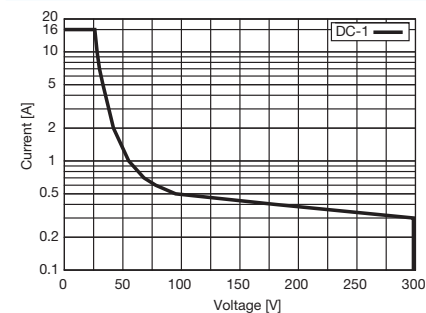
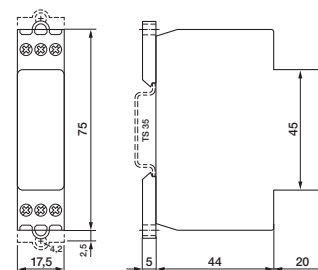
0.4 Nm

Housing material / weight

Lexan / 70 g

Mounting

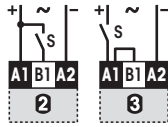
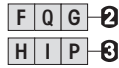
TS-35 or Back Panel Mounting

Product References**Standard****CIM3/UC24-240V****Railway****CIM3R/UC24-240V****Connection diagram****Fig.1 AC voltage endurance****Fig. 2 DC load limit curve****Dimensions****Technical approvals, conformities**

IEC/EN 50155, IEC/EN 60730

**Maximum contact load****2 A / 250 V AC-1****Minimum contact load****50 mA****Time functions and related connection diagrams** (Function diagrams: refer to page 148)

The functions are selectable by rotary switch

**LED function table:**

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data7 partial time ranges, t_{max} (rotary switch)

Fine adjustment range (rotary knob)

Time range tolerance

Repetition accuracy

Response time, power on, on A1

Min. trigger pulse on B1

Reset time B1 (AC/DC)

Voltage failure buffering (50 / 60 Hz)

0.6, 6, 60 s / 6, 60 min / 6, 60 h

 $t_{min} \dots t_{max}$: 0.5 ... 6 t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 % ± 0.1 % or DC: 2 ms / AC: 10 ms ≤ 45 ms

20 ms (AC / DC)

 ≤ 30 ms ≥ 20 ms**Output**

Type

Rated operational current at 40 °C (Fig.1)

Max. inrush current (10 ms)

Max. switching voltage

Max. AC load AC-1

 I^2t value

Leakage current

Triac, zero crossing

2 A

100 A

250 V

300 VA

78 A²s

< 1 mA

Power supply- and control input

Nominal voltage

Operating voltage range

Power consumption

Frequency range

Allowed DC residual current into B1

AC Neon lamp residual current into B1

Trigger threshold voltage on B1, AC / DC

UC 24-240 V (UC = AC / DC)

UC 19 ... 250 V

approx. 1 W

15 ... 60 Hz

 ≤ 0.5 mA ≤ 10 mA

15 / 17 V

Insulation

Test voltage between output and control input

2.5 kV rms / 1 min

Specifications

Ambient temperature storage /operation

-40 ... 85 °C / -40 ... 60 °C (No Ice)

(Railway: -70 °C) (No Ice)

Conductor cross section

Stranded wire 2.5 mm², 2 x 1.5 mm²

Protection degree

IP 20

Nominal screw torque

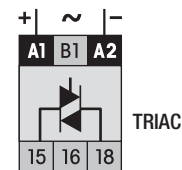
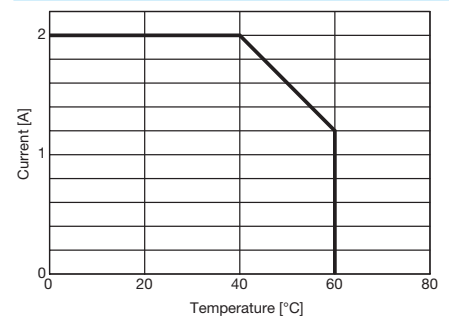
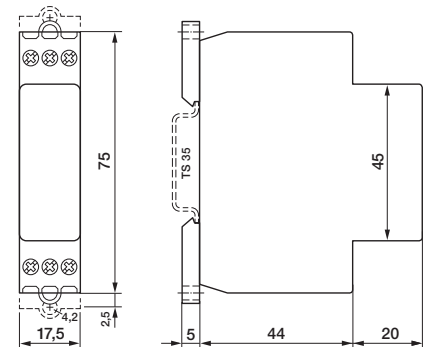
0.4 Nm

Housing material / weight

Lexan / 70 g

Mounting

TS-35 or Back Panel Mounting

Product References**Standard****CIM3/UC24-240V****Railway****CIM3R/UC24-240V****Connection diagram****Fig.1 Output derating curve****Dimensions****Technical approvals, conformities**

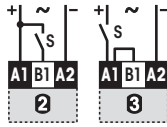
IEC/EN 50155, IEC/EN 60730



Maximum contact load 4 A / 30 V DC-1
Recommended minimum contact load 1 mA

Time functions and related connection diagrams (Function diagrams: refer to page 148)
 The functions are selectable by rotary switch

F Q G ②
 H I P ③



LED function table:

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

Time data

7 partial time ranges, t_{max} (rotary switch) 0.6, 6, 60 s / 6, 60 min / 6, 60 h
 Fine adjustment range (rotary knob) $t_{min} \dots t_{max}$, 0.5 ... 6
 Time range tolerance t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %
 Repetition accuracy ± 0.1 % or DC: 2 ms / AC: 10 ms
 Response time, power on, on A1 ≤ 45 ms
 Min. trigger pulse on B1 20 ms (AC / DC)
 Reset time B1 (AC/DC) ≤ 30 ms
 Voltage failure buffering (50 / 60 Hz) ≥ 20 ms

Output

Type MOS FET
 Rated operational current (Fig. 1) 4 A
 Max. inrush current (10 μ s) 40 A
 Max. switching voltage 30 V
 Leakage current $< 10 \mu$ A

Power supply- and control input

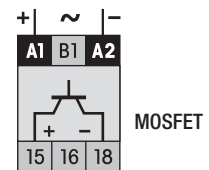
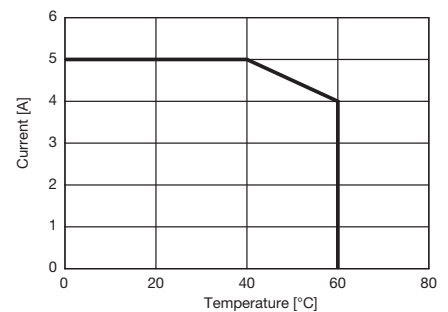
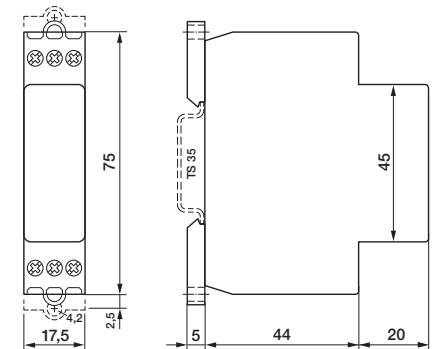
Nominal voltage (UC = AC / DC) **UC 24-240 V (UC = AC / DC)**
 Operating voltage range UC 19 ... 250 V
 Power consumption approx. 1 W
 Frequency range 15 ... 60 Hz
 Allowed DC residual current into B1 ≤ 0.5 mA
 AC Neon lamp residual current into B1 ≤ 10 mA
 Trigger threshold voltage on B1, AC / DC 15 / 17 V

Insulation

Test voltage between output and control input 2.5 kV rms / 1 min

Specifications

Ambient temperature storage / operation -40 ... 85 °C / -40 ... 60 °C (No Ice)
 (Railway: -70 °C) (No Ice)
 Conductor cross section Stranded wire 2.5 mm², 2 x 1.5 mm²
 Protection degree IP 20
 Nominal screw torque 0.4 Nm
 Housing material / Weight Lexan / 70 g
 Mounting TS-35 or Back Panel Mounting

Product References**Railway****CIM33R/UC24-240V****Connection diagram****Fig.1 Output derating curve****Dimensions****Technical approvals, conformities**

IEC/EN 50155, IEC/EN 60730

Notes

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form small squares across the entire surface. There are no margins, text, or other markings on the paper.

2.3 Time Cubes

Application	Types
CT Series	
8-pin and 11-pin Timecube	CT2, CT3

CT2, CT3**8-pin and 11-pin Timecube®****Time functions** (Function diagrams: refer to page 148)**Operating voltage controlled types**

CT2- / CT3-E30: Function E, on delay
 CT2- / CT3-W30: Function W, one shot
 CT2- / CT3-B30: Function B, blinker

Trigger input controlled types

CT2- / CT3-A30, off delay
 CT2- / CT3-K30, pulse shaping

Time data

4 partial time ranges (DIP switch)

3 sec	30 sec	3 min	30 min
			

Fine adjustment time range (rotary knob)

 $t_{min} \dots t_{max}$, 2 ... 30

Time range tolerance

 t_{min} : 0 ... + 35 %

Repetition accuracy

 $\pm 0.5 \%$ or $\pm 20 \text{ ms}$

Reset time

 $\leq 200 \text{ ms}$

Reset time B1 (trigg. inp.) A, K

 $\leq 80 \text{ ms}$

Voltage failure buffering

5 ms (except the relay)

Power supply- and control input (UC = AC or DC)

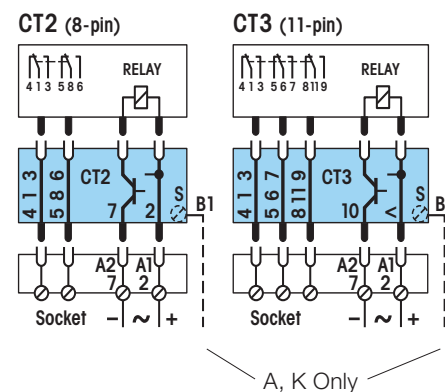
CT2- / CT3- ... / S	DC 9.5 ... 18 V	12 mA
CT2- / CT3- ... / L	UC 20 ... 65 V	6 mA
CT2- / CT3- ... / M	UC 90 ... 150 V	2 mA
CT2- / CT3- ... / U	UC 180 ... 265 V	2 mA
CT2- / CT3- ... / H	UC 90 ... 265 V	2 mA
Residual current E, W, B	$\leq 0.3 \text{ mA}$	
Residual current B1 (trigg. inp.) A, K	$\leq 0.2 \text{ mA}$	

Specifications

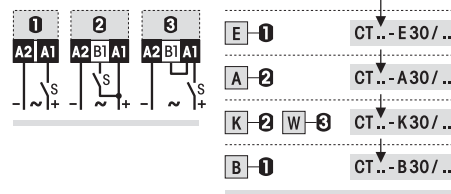
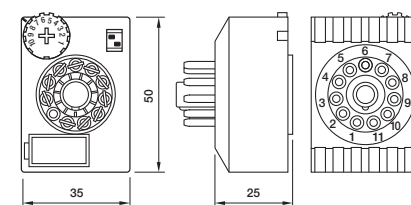
Ambient temperature storage / operation	-40 ... +70 °C / -25 ... +60 °C (no ice)
Protection degree	IP40
Housing material	Lexan
Weight	35 g
Mounting	Socket

Product References

8 pole	11 pole	Voltage
CT2-E30/S CT2-B30/S CT2-A30/S CT2-K30/S	CT3-E30/S CT3-B30/S CT3-A30/S CT3-K30/S	DC 9.5...18 V
CT2-E30/L CT2-B30/L CT2-A30/L CT2-K30/L	CT3-E30/L CT3-B30/L CT3-A30/L CT3-K30/L	UC 20...65 V
CT2-A30/M CT2-K30/M	CT3-A30/M CT3-K30/M	UC 90...150 V
CT2-A30/U CT2-K30/U	CT3-A30/U CT3-K30/U	UC 180...265 V
CT2-E30/H CT2-B30/H	CT3-E30/H CT3-B30/H	UC 90...265 V

**Wiring diagram****Order Number**

2 = 8-pole
 3 = 11-pole

**Dimensions**

Only 11-pin version shown.
 The dimension of the 8-pin version are identical

Technical approvals, conformities

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form small squares across the entire surface. There are no margins, text, or other markings on the paper.

Notes

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form a uniform pattern of small squares across the entire surface. There are no margins, text, or other markings on the paper.

2.4 Time Modules

Application	Types	Contacts	AC ratings	DC ratings	Socket
CT Series					
Multifunction Time Module	CT32R	-	-	-	S3-M / S5-M
Multifunction Time Module	CT33R	-	-	-	S3-M / S5-M
Multifunction Time Module	CT36R	-	-	-	S3-M / S5-M

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 S3-MB0 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 mm² 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.

