LINETRAXX® CME420

Multi-functional current relay, AC, overcurrent/undercurrent/window discriminator function

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Multifunctional current relay for AC systems, overcurrent/undercurrent/window discriminator function

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Device features

- Undercurrent and overcurrent monitoring in AC systems 0.1…16 A
- Indirect current monitoring with standard current transformers x/1 A, x/5 A, x/10 A
- Transformation ratio n allows adaptation to all standard current transformers x/1 A, x/5 A, x/10 A
- Different monitoring functions selectable < *I*, > *I* or < *I*/> *I*
- Start-up delay, response delay, delay on release
- Adjustable switching hysteresis
- r.m.s. value measurement (AC)
- Digital measured value display via multi-functional LC display
- LEDs: Power On, Alarm 1, Alarm 2
- Measured value memory for operating value
- Continuous self monitoring
- Internal test/reset button
- Two separate alarm relays (one changeover contact each)
- N/C or N/O operation and fault memory behaviour selectable
- Password protection for device setting
- Sealable transparent cover
- Two-module enclosure (36 mm)
- Push-wire terminal (two terminals per connection)
- RoHS compliant

Approvals

Product description

The CME420 series current relays monitor undercurrent and overcurrent in AC systems as well as the current between two threshold values (window discriminator function). The currents are measured as r.m.s. values (AC). The currently measured value is continuously shown on the LC display. The measured value required to trigger the alarm relay is stored. Due to adjustable delay times, installation-specific characteristics, such as device-specific making currents, short-time current changes etc. can be considered. Current measurement is possible either directly or indirectly via standard current transformers x/1 A, x/5 A, x/10 A. External supply voltage is required.

Typical applications

- Current consumption of motors, such as pumps, elevators, cranes
- Monitoring of lighting circuits, heating circuits, charging stations
- Monitoring of emergency lighting
- Monitoring of screw conveyors, e.g. in sewage plants
- Dust removal in wood working

Function

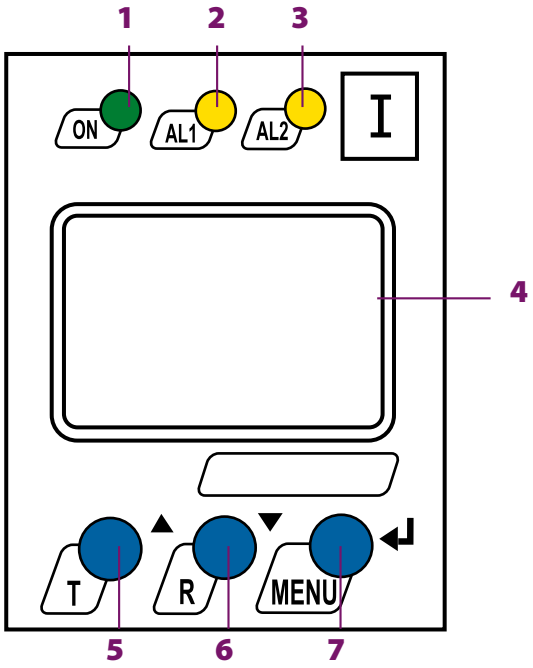
Once the supply voltage is applied, the start-up delay begins. Measured values changing during this time do not influence the switching state of the alarm relays.

The devices provide two separately adjustable measuring channels (overcurrent/undercurrent). When the measuring quantity exceeds the response value (“Alarm 1”) or falls below the response value (“Alarm 2”), the time of the response delays “$t_{on1/2}$” begins. Once the response delay has elapsed, the alarm relays switch and the alarm LEDs light up. When the measuring value exceeds or falls below the release value (response value plus hysteresis) after the alarm relays have switched, the selected release time “t_{off}” begins. When “t_{off}” has elapsed, the alarm relays switch back to their original state (fault memory inactive). When the fault memory is activated, the alarm relays remain in alarm position until the reset button is pressed.

Standards

The LINETRAXX® CME420 series complies with the requirements of the device standards: IEC 60255-6.

Operating elements



1 - Power On LED “ON” (green); lights when supply voltage is applied and flashes in the event of system fault alarm

2 - Alarm LED “AL1” (yellow): lights when the set response value is exceeded or flashes in the event of system fault alarm

3 - Alarm LED “AL2” (yellow): lights when the value falls below the set response value or flashes in the event of system fault alarm

4 - Multi-functional LC display

5 - Test button “T”:
Arrow up button: to change the measured value display, move upwards in the menu or to change parameters.

To call up the self test: press the button “T” >1.5 s

6 - Reset button “R”:
Arrow down button: to change the measured value indication, move downwards in the menu or to change parameters

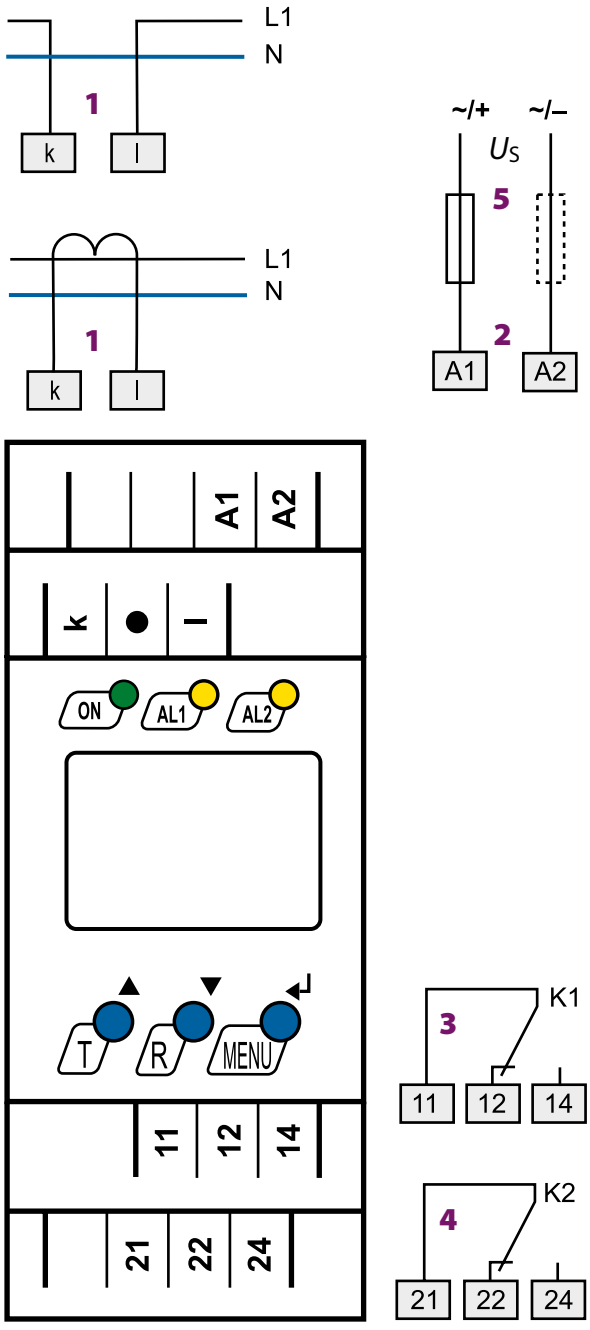
To delete stored alarms: press the button “T” >1.5 s

7 - “MENU” button:
Enter button: to confirm the measured value indication or to confirm changed parameters

To call up the menu system, press the button “T” >1.5 s

Press the ESC button >1.5 s to abort an action or to return to the previous menu level

Wiring diagram



1 - Connection to the system/load being monitored

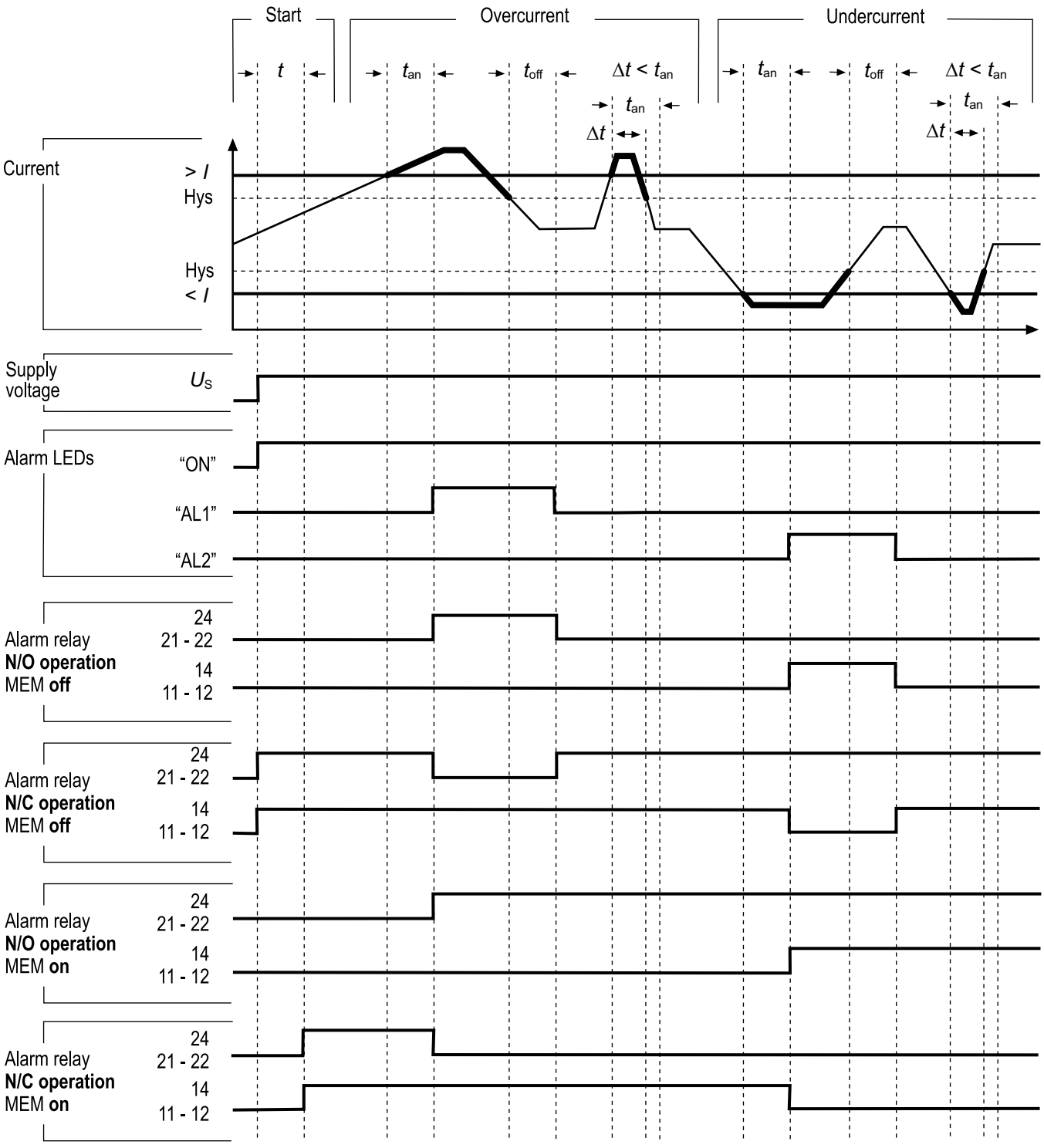
2 - Supply voltage U_S (see ordering information)

3 - Alarm relay “K1”: configurable for <*I*, >*I* or <*I*/>*I*/ERROR/TEST

4 - Alarm relay “K2”: configurable for <*I* , >*I* or <*I*/>*I*/ERROR/TEST

5 - Line protection according to IEC 60364-4-43:
6 A fuse recommended. If being supplied from an IT system, both lines have to be protected by a fuse.

Timing diagram current monitoring



t - Start-up delay

*t*an - Response time
Operating time (*t*ae) + Response delay (*t*an 1/2)

*t*off - Delay on release

Technical data

Insulation coordination acc. to IEC 60664-1/IEC 60664-3

Rated insulation voltage	250 V
Rated impulse voltage/overvoltage category	4 kV/III
pollution degree	3
Protective separation (reinforced insulation) between	(A1, A2) - (k, l) - (11, 12, 14) - (21, 22, 24)
Maximum nominal voltage of the system being monitored when the conductor being monitored is directly connected:	
With protective separation	AC 230 V
Without protective separation	AC 400 V

Supply voltage

CME420-D-1:

Supply voltage U_S	AC 16…72 V/DC 9.6…94 V
Frequency range U_S	42…460 Hz

CME420-D-2:

Supply voltage U_S	AC/DC 70…300 V
Frequency range U_S	42…460 Hz
Power consumption	≤ 4 VA

Measuring circuit

Measuring range (r.m.s. value, screw-type terminal)	AC 0.05…16 A
Measuring range (r.m.s. value, push-wire terminal)	AC 0.05…12 A
Overload capability < 1 s	40 A
Rated frequency f_n	42…460 Hz

Response values

Undercurrent

Undercurrent< *I* (alarm I_2), direct connection:	
Push-wire terminal	AC 0.1…12 A (1 A)*
Screw-type terminal	AC 0.1…16 A (1 A)*
or external current transformer	
Undercurrent < *I* (prewarning I_1)	100…200 % (150 %)*

Overcurrent

Overcurrent > *I* (alarm I_2), direct connection:	
Push-wire terminal	AC 0.1…12 A (1 A)*
Screw-type terminal	AC 0.1…16 A (1 A)*
or external current transformer	
Overcurrent > *I* (prewarning I_1)	10…100 % (50 %)*

Others

External current transformer	x/1 A, x/5 A, x/10 A
Transformation ratio factor n	1…2000 (1)*
Relative percentage error at 50/60 Hz	± 3 %, ± 2 digits
Relative percentage error in the range of 42…2000 Hz	± 5 %, ± 2 digits
Hysteresis	10…40 % (15 %)*

Specified time

Starting delay	0…300 s (0.5 s)*
Response delay t_{on1}	0…300 s (1 s)*
Response delay t_{on2}	0…300 s (0 s)*
Delay on release t_{off}	0…300 s (1 s)*
Operating time t_{ae}	≤ 70 ms
Response time t_{an}	$t_{an} = t_{ae} + t_{on1/2}$
Recovery time t_b	≤ 300 ms

Displays, memory

Display	LC display, multi-functional, not illuminated
Measuring range measured value x transformation ratio factor	AC 0.01…16 A x n
Operating error at 50/60 Hz	± 3 %, ± 2 digits
Operating error in the range of 42…2000 Hz	± 5 %, ± 2 digits
Measured-value memory (HiS) for the first alarm value	data record measured values
Password	Off/0…999 (Off)*
Fault memory (M) alarm relay	on/off (on)*

Switching elements

Number	2 relays, with one changeover contact each (K1, K2)
Operating principle	N/C operation n.c./N/O operation n.o. (N/C operation n.c.)*
Electrical service life under rated operating conditions	10000 switching operations

Contact data acc. to IEC 60947-5-1:

Utilization category	AC-13	AC-14	DC-12	DC-12	DC-12
Rated operational voltage	230 V	230 V	24 V	110 V	220 V
Rated operational current	5 A	3 A	1 A	0.2 A	0.1 A

Minimum contact load	1 mA at AC/DC ≥ 10 V

Environment/EMC

EMC	IEC 61326
Operating temperature	-25…+55 °C
Classification of climatic conditions acc. to IEC 60721:	
Stationary use (IEC 60721-3-3)	3K5 (except condensation and formation of ice)
Transportation (IEC 60721-3-2)	2K3 (except condensation and formation of ice)
Storage (IEC 60721-3-1)	1K4 (except condensation and formation of ice)
Classification of mechanical conditions acc. to IEC 60721:	
Stationary use (IEC 60721-3-3)	3M4
Transportation (IEC 60721-3-2)	2M2
Storage (IEC 60721-3-1)	1M3

Connection

Connection	push-wire terminals
Connection properties:	
rigid	0.2…4/0.2…2.5 mm²/AWG 24…14
flexible without ferrule	0.2…4/0.2…2.5 mm²/AWG 24…14
flexible with ferrule	0.2…1.5 mm²/AWG 24…16
Stripping length	10 mm
Opening force	50 N
Test opening, diameter	2.1 mm

Other

Operating mode	continuous operation
Position	any position
Degree of protection DIN EN 60529, internal components	IP30
Degree of protection DIN EN 60529, terminals	IP20
Enclosure material	polycarbonate
Flammability class	UL94 V-0
DIN rail mounting acc. to	IEC 60715
Screw fixing	2 x M4 with mounting clip
Documentation number	D00034
Weight	≤160 g

( )* = factory setting

Ordering information

Supply voltage [1] U_S		Type	Art. No.
AC	DC		
16…72 V, 42…460 Hz	9.6…94 V	CME420-D-1	B 7306 0001
70…300 V, 42…460 Hz	70…300 V	CME420-D-2	B 7306 0002

Device version with screw terminals on request.
[1] Absolut values

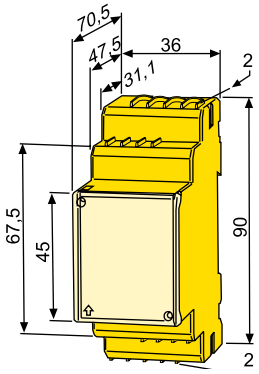
Accessories

Type designation	Art. No.
Mounting clip for screw mounting (1 piece per device)	B 9806 0008

Dimension diagram XM420

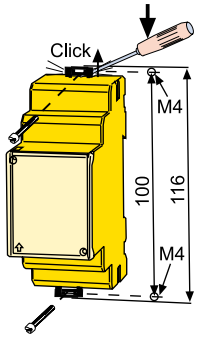
Dimensions in mm

Open the front plate cover in direction of arrow!



Screw mounting

Note: The upper mounting clip must be ordered separately (see ordering information).



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