

LINETRAXX® CME420

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





LINETRAXX® CME420

Device features

- Undercurrent and overcurrent monitoring in AC systems 0.1...16 A
- Indirect current monitoring with standard current transformers x/5 A
- Transformation ratio n allows adaptation to all standard current transformers x/5 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/5 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.

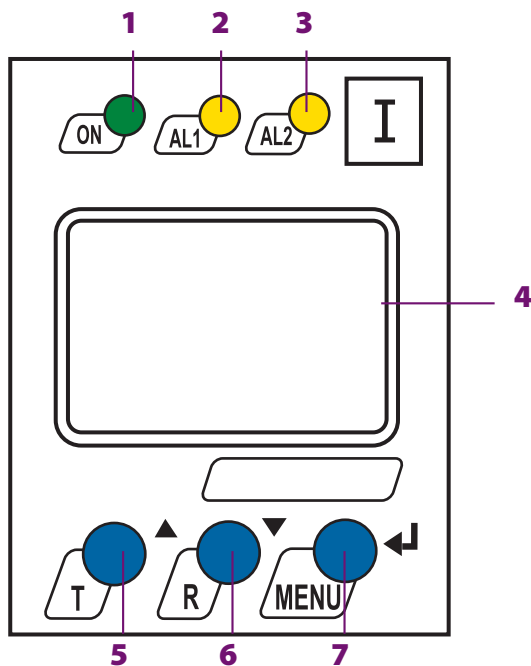
The devices provide two separately adjustable measuring channels (overcurrent/undercurrent). When the measuring quantity exceeds the response value ("Alarm 1") or falls below the response value ("Alarm 2"), the time of the response delays " $t_{on1/2}$ " begins. Once the response delay has elapsed, the 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.

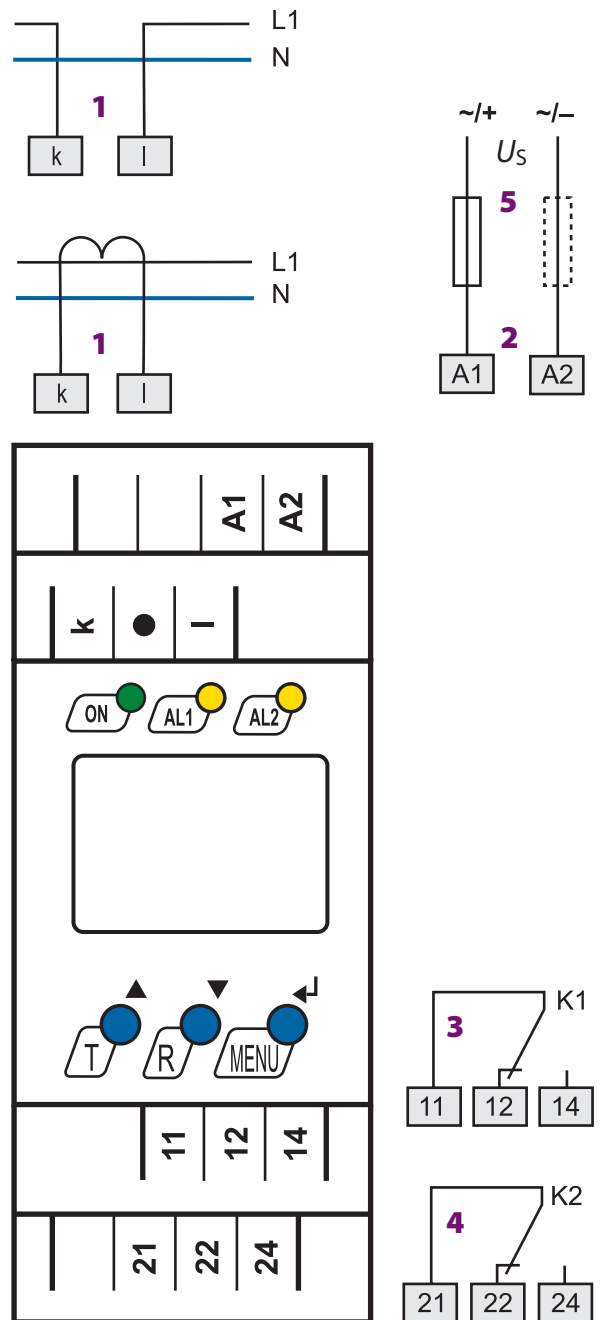


Operating elements



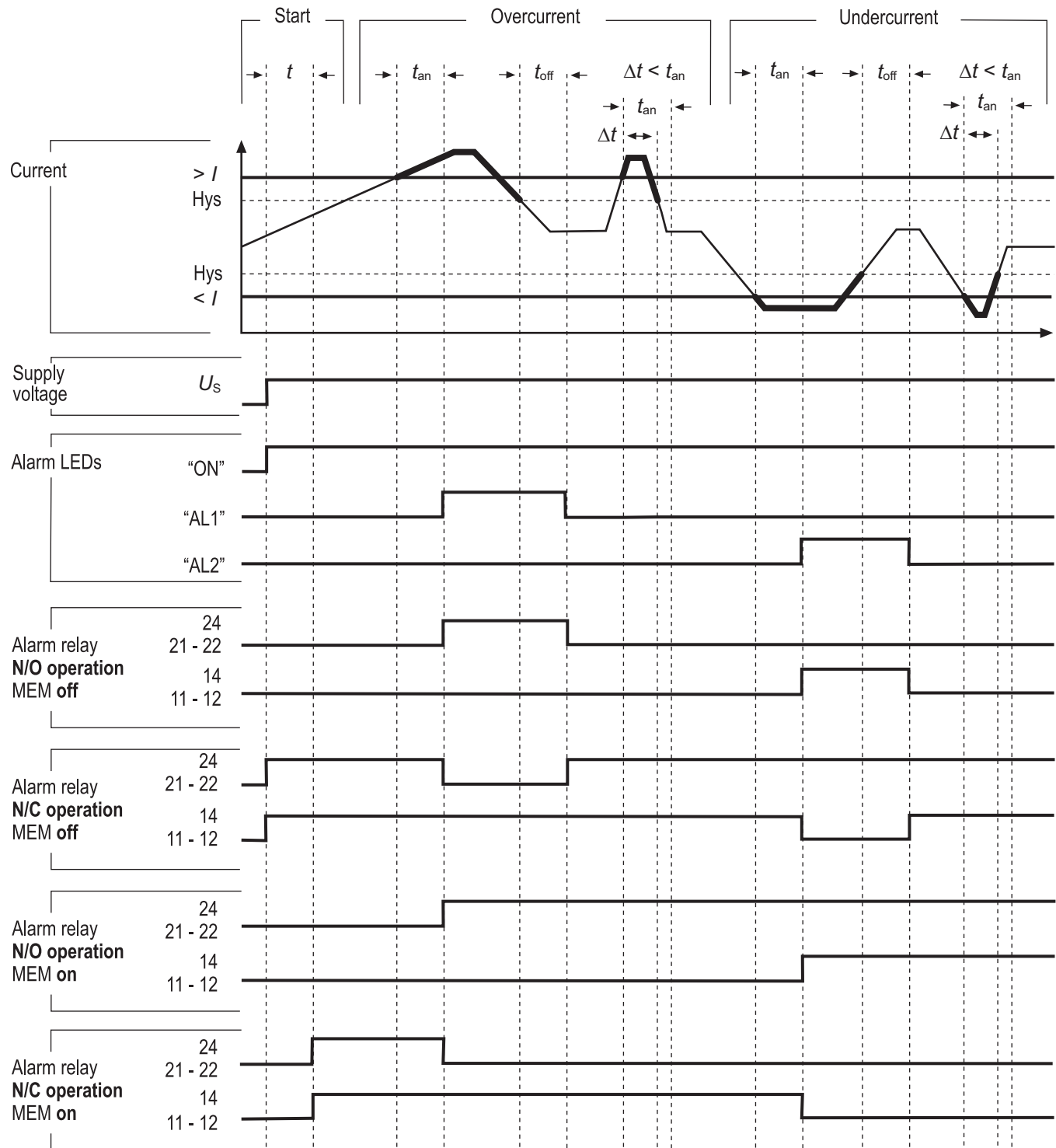
- 1 - Power On LED "ON" (green); lights when supply voltage is applied and flashes in the event of system fault alarm
- 2 - Alarm LED "AL1" (yellow): lights when the set response value is exceeded or flashes in the event of system fault alarm
- 3 - Alarm LED "AL2" (yellow): lights when the value falls 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 $\lt;I, >I$ or $\lt;I/>I$/ERROR/TEST
- 4 - Alarm relay "K2": configurable for $\lt;I, >I$ or $\lt;I/>I$/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/pollution degree	4 kV/3
Protective separation (reinforced insulation) between (A1, A2) - (k, l) - (11, 12, 14) - (21, 22, 24)	
Maximum rated voltage of the system being monitored (conductor to be monitored directly connected)	
With protective separation	AC 230 V
Without protective separation	AC 400 V
Voltage test acc. to IEC 61010-1	2.21 kV

Supply voltage

Supply voltage U_s	see ordering information
Power consumption	≤ 4 VA

Measuring circuit

Rated frequency	42...460 Hz
Measuring range	AC 0.05...16 A
Overload capability, continuous	17.6 A
Overload capability < 1 s	40 A

Response values

Undercurrent (alarm 2)	direct connection: AC 0.1...16 A (1 A)*
Overcurrent (alarm 1)	direct connection: AC 0.1...16 A (10 A)* current transformer x/5 A: 0.1 x n...999 A (10 A)*
Transformation ratio n	1...2000 (1)*
Relative uncertainty in the range of 50/60 Hz	± 3 % ± 2 digit
Relative uncertainty in the range of 40...460 Hz	± 5 % ± 2 digits
Hysteresis	1...40% (15 %)*

Time response

Start-up delay t	0...99 s (0.5 s)*
Response delay t_{on1}	0...99 s (1 s)*
Response delay t_{on2}	0...99 s (0 s)*
Delay on release t_{off}	0...99 s (0.1 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 range measured value	AC 0.01...16 A x n
Operating uncertainty in the range of 50/60 Hz	± 3 % ± 2 digit
Operating uncertainty in the range of 40...460 Hz	± 5 % ± 2 digit
Measured-value memory for alarm value	data record measured values
Password	off/0...999 (off)*
Fault memory alarm relay	on/off (on)*

Switching elements

Number	2 relays, each with 1 changeover contact				
Operating principle	NC/N/O operation (N/O operation)*				
Electrical endurance, number of cycles	10000				
Contact data acc. to IEC 60947-5-1					
Utilisation 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/gold-plated relay contacts	1 mA at AC/DC ≥ 10 V				

Environment/EMC

EMC	IEC 61326-1
Operating temperature	-25...+55 °C
Climatic class acc. to IEC 60721	
Stationary use (IEC 60721-3-3)	3K5 (except condensation and formation of ice)
Transport (IEC 60721-3-2)	2K3 (except condensation and formation of ice)
Long-time storage (IEC 60721-3-1)	1K4 (except condensation and formation of ice)
Classification of mechanical conditions IEC 60721	
Stationary use (IEC 60721-3-3)	3M4
Transport (IEC 60721-3-2)	2M2
Long-time storage (IEC 60721-3-1)	1M3

Connection

Connection type	push-wire terminals
Connection properties	
rigid	0.2...2.5 mm ² (AWG 24...14)
flexible without ferrule	0.2...2.5 mm ² (AWG 24...14)
flexible with ferrule	0.2...1.5 mm ² (AWG 24...16)
Stripping length	10 mm
Opening force	50 N
Test opening, diameter	2.1 mm

Other

Operating mode	continuous operation
Position of normal use	any
Degree of protection, internal components (IEC 60529)	IP30
Degree of protection, terminals (IEC 60529)	IP30
Enclosure material	polycarbonate
Screw mounting	2 x M4 with mounting clip
DIN rail mounting acc. to	IEC 60715
Flammability class	UL94V-0
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

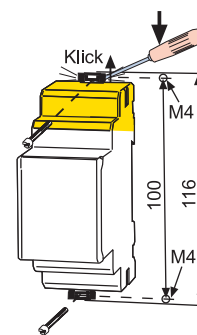
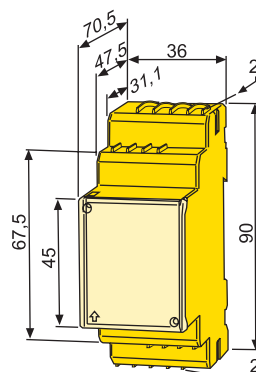
Dimension diagram XM420

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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