LINETRAXX® CME420
Multi-functional current relay, AC, overcurrent/undercurrent/window discriminator function
**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 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

**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.
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

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

Undercurrent and overcurrent relay LINETRAX® CME420
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: $\leq 4$ 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…2000 Hz

**Response values**
- **Undercurrent**
  - Undercurrent $< I_{(alarm)}$ (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 $< I_{(prewarning)}$: 100…200 % (150 %)*
- **Overcurrent**
  - Overcurrent $> I_{(alarm)}$ (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 $> I_{(prewarning)}$: 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: $\pm 3 \%$, $\pm 2$ digits
  - Relative percentage error in the range of 42…2000 Hz: $\pm 5 \%$, $\pm 2$ digits
  - Hysteresis: 10…40 % (15 %)*

**Specified time**
- Starting delay: $0…300$ s (0.5 s)*
- Response time $t_{on1}$: $0…300$ s (1 s)*
- Response time $t_{on2}$: $0…300$ s (0 s)*
- Delay on release $t_{off}$: $0…300$ s (1 s)*
- Operating time $t_{on}$: $\leq 70$ ms
- Response time $t_{on}$: $t_{on} = t_{on1} + t_{on2}$
- Recovery time $t_{off}$: $\leq 300$ ms

**Displays, memory**
- Display: LC display, multi-functional, not illuminated
- Measuring range measured value $\times$ transformation ratio factor: AC 0.01…16 A $\times n$
- Operating range at 50/60 Hz: $\pm 3 \%$, $\pm 2$ digits
- Operating range in the range of 42…2000 Hz: $\pm 5 \%$, $\pm 2$ 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/O 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 $\geq 10$ 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…2.5 mm² (AWG 24…14)
  - flexible without ferrule: 0.75…2.5 mm² (AWG 19…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
- 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: $\leq 160$ g

( )* = factory setting
Supply voltage $U_S$

<table>
<thead>
<tr>
<th>Type</th>
<th>Art. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td></td>
</tr>
<tr>
<td>16…72 V, 42…460 Hz</td>
<td>9.6…94 V</td>
</tr>
<tr>
<td>70…300 V, 42…460 Hz</td>
<td>70…300 V</td>
</tr>
</tbody>
</table>

Device version with screw terminals on request.

1) Absolut values

Accessories

<table>
<thead>
<tr>
<th>Type designation</th>
<th>Art. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting clip for screw mounting</td>
<td>B 9806 0008</td>
</tr>
<tr>
<td>(1 piece per device)</td>
<td></td>
</tr>
</tbody>
</table>

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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