OVERCURRENT, UNDERCURRENT & BAND (WINDOW) CMD Series



- Compact 22.5 mm wide enclosure mounts on 35mm DIN-rail
- Monitors AC single phase and DC current
- Overcurrent, undercurrent, band (window) modes
- Latching output option
- Adjustable thresholds and time delays
- Three color LED indicators
- ♦ 5A DPDT output
- Universal 24-240V AC/DC control voltage range



CMD Series Current Sensing Relays monitor current conditions to protect equipment and critical processes, reducing downtime and extending operating life.

Model CMD10AD2U monitors single phase AC and DC current to protect against overcurrent and undercurrent fault conditions. A band (window) function can protect equipment that is required to operate within a maximum and minimum current limit. Each function can be set to operate in latch mode. See "Latching Operation" on page 9.

Separate adjustment dials allow selecting the maximum threshold (MAX), minimum threshold (MIN), tripping delay(Delay), and start-up sensing delay (Start).

The relays are typically used to detect conveyor jam-up conditions, machine tool wear, no load conditions, HVAC system status, and heater or lamp loads. The relays are also used in the sequencing of operations.

MONITORED	CONTROL	CATALOG	WIRING
CURRENT	VOLTAGE	NUMBER	
5mA-100mA 0.05A-1A 0.5A-10A	24-240V AC/DC	CMD10AD2U	$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $ \left\begin{array}{c} \end{array} \\



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FUNCTIONS

Operation:

When the supply voltage V is applied, the output relays switch into on-position (yellow LED illuminated) and the start-up suppression (START) begins (green LED V/t flashes). Changes of the monitored current during this period do not affect the state of the output relay. After the startup suppression (START) has expired, the green LED will flash in an alternating pattern when an invalid MIN setting and MAX setting is selected (MIN must be below MAX).

Overcurrent monitoring (OVER, OVER+LATCH):

When the monitored current exceeds the value adjusted at the MAX-dial, the tripping delay (DELAY) begins (red LED MAX flashes). After the tripping delay (DELAY) has expired (red LED MAX illuminated), the output relays switch into off-position (yellow LED RELAY not illuminated). The output relays again switch into on-position (yellow LED illuminated), when the monitored current falls below the value adjusted at the MIN-dial (red LED MAX not illuminated).

If the fault latch is activated (OVER+LATCH) and the monitored current remains above the MAX-value longer than the tripping delay, the output relays remain in the off-position even if the monitored current falls below the value adjusted at the MINdial. After resetting the latch (interrupting and re-applying the control voltage), the output relays switch into on-position and a new monitoring cycle begins with the delay start-up suppression (START).

Undercurrent monitoring (UNDER, UNDER+LATCH):

When the monitored current falls below the value adjusted at the MIN-dial, the tripping delay (DELAY) begins (red LED MIN flashes). After the tripping delay (DELAY) has expired (red LED MIN illuminated), the output relays switch into off-position (yellow LED not illuminated). The output relays again switch into on-position (yellow LED illuminated), when the monitored current exceeds the value adjusted at the MAX-dial.

If the fault latch is activated (UNDER+LATCH) and the monitored current remains below the MIN-value longer than the tripping delay, the output relays remain in the off-position even if the monitored current exceeds the value adjusted at the MAXdial. After resetting the latch (interrupting and re-applying the control voltage), the output relays switch into on-position and a new monitoring cycle begins with the delay start-up suppression (START).

Band (Window) Function (BAND, BAND+LATCH):

The output relays switch into on-position (yellow LED RELAY illuminated) when the monitored current exceeds the value adjusted at the MIN-dial. When the monitored current exceeds the value adjusted at the MAX-dial, the tripping delay (DELAY) begins (red LED MAX flashes). After the interval has expired (red LED MAX illuminated), the output relays switch into off-position (yellow LED RELAY not illuminated). The output relays again switch into on-position (yellow LED RELAY illuminated) when the monitored current falls below the value adjusted at the MAXdial (red LED MAX not illuminated). When the monitored current falls below the value adjusted at the MIN-dial, the tripping delay (DELAY) begins again (red LED MIN flashes). After the delay has expired (red LED MIN illuminated), the output relays switch into off-position (yellow LED not illuminated).

If the fault latch is activated (WIN+LATCH) and the monitored current remains below the MIN-value longer than the set interval of the tripping delay, the output relays remain in the off-position even if the monitored current exceeds the value adjusted at the MIN-dial. If the monitored current remains above the MAX-value longer than the set interval of the tripping delay, the output relays remain in the offposition even if the monitored current falls below the value adjusted at the MAX-dial. After resetting the latch (interrupting and re-applying the control voltage), the output relays switch into on-position and a new monitoring cycle begins with the delay of the start-up suppression (START).









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APPLICATION DATA

Input Voltage Tolerance:

24 to 240V DC (-20% to +25%) 24 to 240V AC (-15% to +10%)

Load (Burden): 4.5VA

Current Settings:

Pick-up (Threshold): 10-100% In adjustable throughout monitored current range Drop-out (Hysteresis): Adjustable from 5 to 95% In

Monitored Current Ranges:

5mA-100mA, 0.05A-1A, 0.5A-10A

Accuracy:

Base accuracy: ≤3% (of maximum scale value) Frequency response: -10% to +5% (48 to 400Hz) Adjustment accuracy: ≤5% (of maximum scale value) Repetition accuracy: ≤2% Temperature influence: ≤0.05% / °C

Maximum Allowable Current:

<u>Range</u>	<u>Max Current</u>
5mA-100mA	800mA
0.05A-1A	3A
0.5A-10A	12A

Recommended Trip Point Hysteresis: >= 5% (In)

Response Times:

Pick-up <= 100 ms, Drop-out Adjustable, 0.1-10s

Sensing Delay on Power-up (START t): Adjustable, 0-10s

Output Contacts:

DPDT 5A@250V AC, 5A@24V DC, B300 Pilot Duty

Life:

Mechanical: 20,000,000 operations Full Load: 200,000 operations at 1000VA resistive load.

Temperature:

Operating: -25° to 55° C (-13° to 131° F) Storage: -25° to 70° C (-13° to 158° F)

Indicator LED:

Green ON: Control Voltage is applied; Green LED flashes: Start-up suppression delay; Yellow ON: Relay output ON; Red ON: Corresponding threshold exceeded; Red flashes: Tripping delay

Mounting:

Compact 22.5 mm wide enclosure mounts on 35mm DIN-rail

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DIMENSIONS



All Dimensions in Inches (Millimeters)

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